26. Attachments

Attachment A- Flow Frequency Memo (June 4, 2010)
Attachment B- Plant Flow Diagram
Attachment C- Sludge Application Cover Letter (Sludge Management Plan)
Attachment D- Facility Location Topographic Map (Stony Creek Quad 39B), other topographic maps
Attachment E- Site Inspection Report
Attachment F- MSTRANTI Data Source, Mixing Zone Analysis (Version 2.1), Station 5ASTO001.20 data, DMR Data, MSTRANTI, Stats.exe
Attachment G- Stream Sanitation Analysis (5/3/1986)
Attachment H- Groundwater Evaluation and Approved Groundwater Monitoring Plan
Attachment I- EPA Checklist
Attachment J- Threatened and Endangered Species Coordination and Reports

Attachment A- Flow Frequency Memo (June 4, 2010)

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Flow Frequency Determination / 303(d) Status
Stony Creek WWTF – VA0062669

TO: Janine Howard

FROM: Jennifer Palmore, P.G.

DATE: June 4, 2010

COPIES: File

The Sussex Service Authority's Stony Creek Wastewater Treatment Facility is located in Stony Creek, VA. The outfall discharges to Stony Creek at rivermile 5ASTO001.10. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

The DEQ conducted several stream flow measurements on Stony Creek above the Stony Creek STP (#02046250) from 1994 to 1998. The measurements were correlated with the same day daily mean values from the continuous record gage on Stony Creek near Dinwiddie, VA (#02046000). The measurements and daily mean values were plotted on a logarithmic graph and a power trend line was extrapolated through the data points. The required flow frequencies at the measurement site were derived from the equation for the trend line. Due to the proximity of the measurement site and discharge point, the values are considered to be equal. The data for the reference gage and the measurement site/discharge point are presented below.

Stony Creek near Dinwiddie (#02046000)
Period of record: 1946-2003
Drainage Area: 112 mi^2

1Q30 = 0.12 cfs	High Flow 1Q10 = 14 cfs
1Q10 = 0.26 cfs	High Flow 7Q10 = 18 cfs
7Q10 = 0.31 cfs	High Flow 30Q10 = 32 cfs
30Q10 = 0.77 cfs	HM = undefined
30Q5 = 1.6 cfs	

Stony Creek above Stony Creek STP (#02046250)
Drainage area: 237 mi^2

1Q30 = 0.16 cfs (0.10 MGD)	High Flow 1Q10 = 23 cfs (15 MGD)
1Q10 = 0.36 cfs (0.23 MGD)	High Flow 7Q10 = 30 cfs (19 MGD)
7Q10 = 0.43 cfs (0.28 MGD)	High Flow 30Q10 = 55 cfs (35 MGD)
30Q10 = 1.1 cfs (0.72 MGD)	HM = undefined
30Q5 = 2.4 cfs (1.5 MGD)	

The high flow months are January through April. The analysis does not address any withdrawals, discharges, or springs lying between the measurement site and the outfall.

During the 2008 305(b)/303(d) Water Quality Assessment, Stony Creek from the confluence with Galley Swamp to its mouth was assessed as a Category 2A water ("Waters are supporting all of the uses for which they were monitored.") The stream was fully supporting of the Aquatic Life, Recreation, and Wildlife Uses; the Fish Consumption Use was not assessed. The facility is not currently addressed in any approved TMDL.

Stony Creek has been considered a Tier 1 water. Antidegradation was not applied during the 2004 modeling effort.

Water quality data from monitoring station 5ASTO001.20 is attached. The station is located on Stony Creek at the Route 301 South bridge, which is approximately 0.1 mile upstream of the discharge.

If you have any questions, please let me know.

2010 Fact Sheets for 303(d) Waters

RIVER BASIN: Chowan River and Dismal Swamp Basins **HYDROLOGIC UNIT:** 03010201

STREAM NAME: **Stony Creek**

TMDL ID: **K21R-03-HG** **2010 IMPAIRED AREA ID:** VAP-K21R-03

ASSESSMENT CATEGORY: 5A **TMDL DUE DATE:** 2022

IMPAIRED SIZE: 8.45 - Miles **Watershed:** VAP-K21R

INITIAL LISTING: 2010

UPSTREAM LIMIT: Mortar Branch

DOWNSTREAM LIMIT: Mouth

Stony Creek from Mortar Branch downstream to its mouth.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Not Supporting

IMPAIRMENT: Mercury

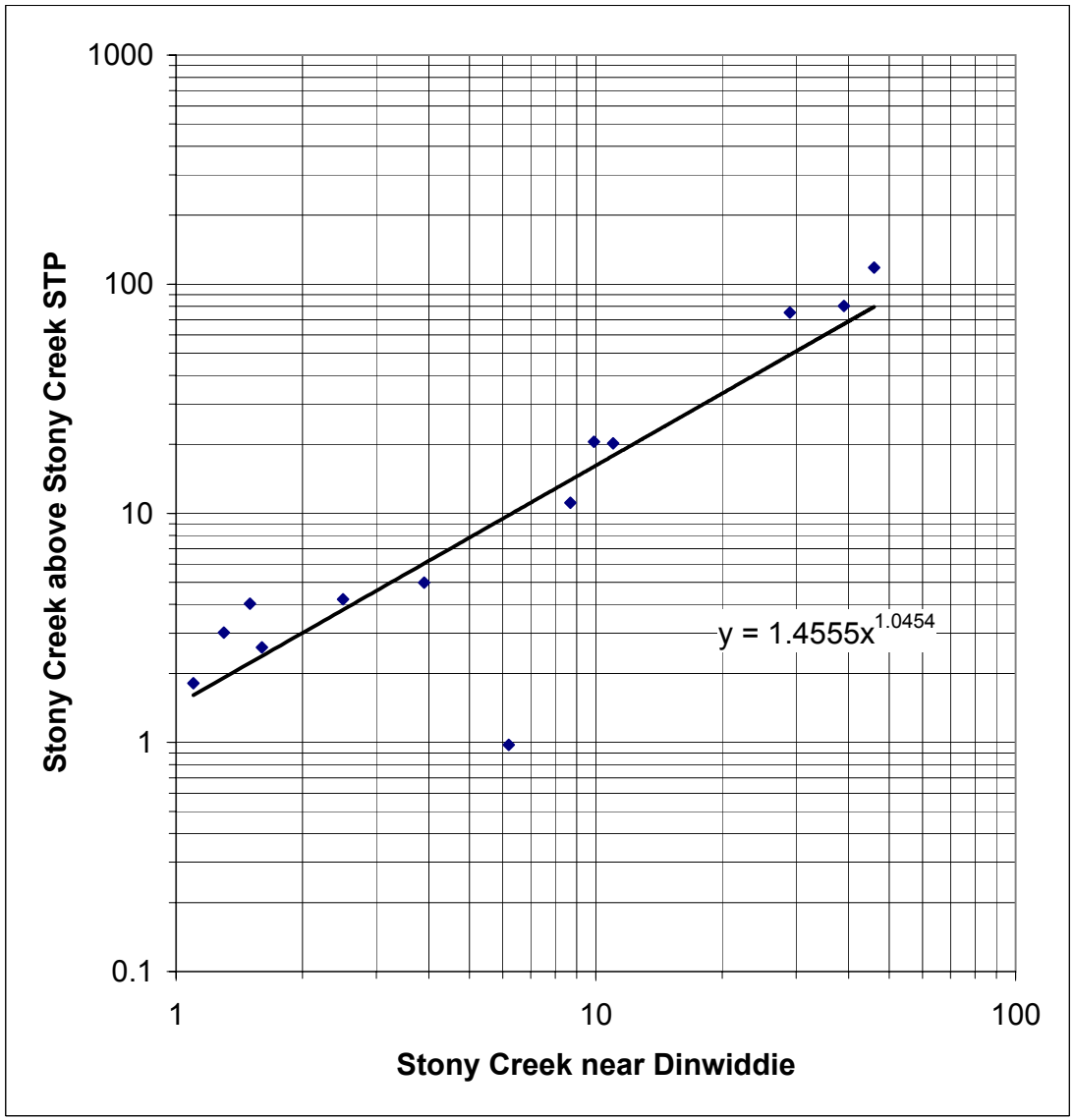
During the 2010 cycle, Stony Creek from Mortar Branch to its mouth was assessed as not supporting of the Fish Consumption Use due to mercury exceedances in flier sunfish and spotted bass during DEQ's 2007 fish tissue sampling.

IMPAIRMENT SOURCE: Unknown, Atmospheric Deposition

The source is considered unknown, however atmospheric deposition is suspected..

RECOMMENDATION: Problem Characterization

Stony Creek above Stony Creek STP, at Stony Creek, VA #02046250
vs Stony Creek near Dinwiddie, VA #02046000



Flow Data (cfs)

Date	Gage	above STP
6/9/1994	9.9	20.5
7/11/1994	8.7	11.1
9/19/1994	6.2	0.976
4/19/1995	29	75.2
8/15/1995	3.9	4.98
9/13/1995	1.5	4.03
4/29/1996	46	118.0
5/29/1997	39	80.3
6/26/1997	11	20.2
9/3/1997	1.3	3.01
10/10/1997	1.1	1.81
8/10/1998	2.5	4.22
9/23/1998	1.6	2.60

Flow Frequencies (cfs)

Gage		at STP	at STP (MGD)
0.12	1Q30	0.16	0.10
0.26	1Q10	0.36	0.23
0.31	7Q10	0.43	0.28
0.77	30Q10	1.1	0.72
1.6	30Q5	2.4	1.5
14	HF 1Q10	23	15
18	HF 7Q10	30	19
32	HF 30Q10	55	35
-	HM	-	
112	DA (mi^2)	237	

High Flow Months: Jan-Apr

Regression Statistics	
Multiple R	0.9863
R Square	0.9729
Adjusted R Square	0.9704
Standard Error	6.6266
Observations	13

Attachment B- Plant Flow Diagram

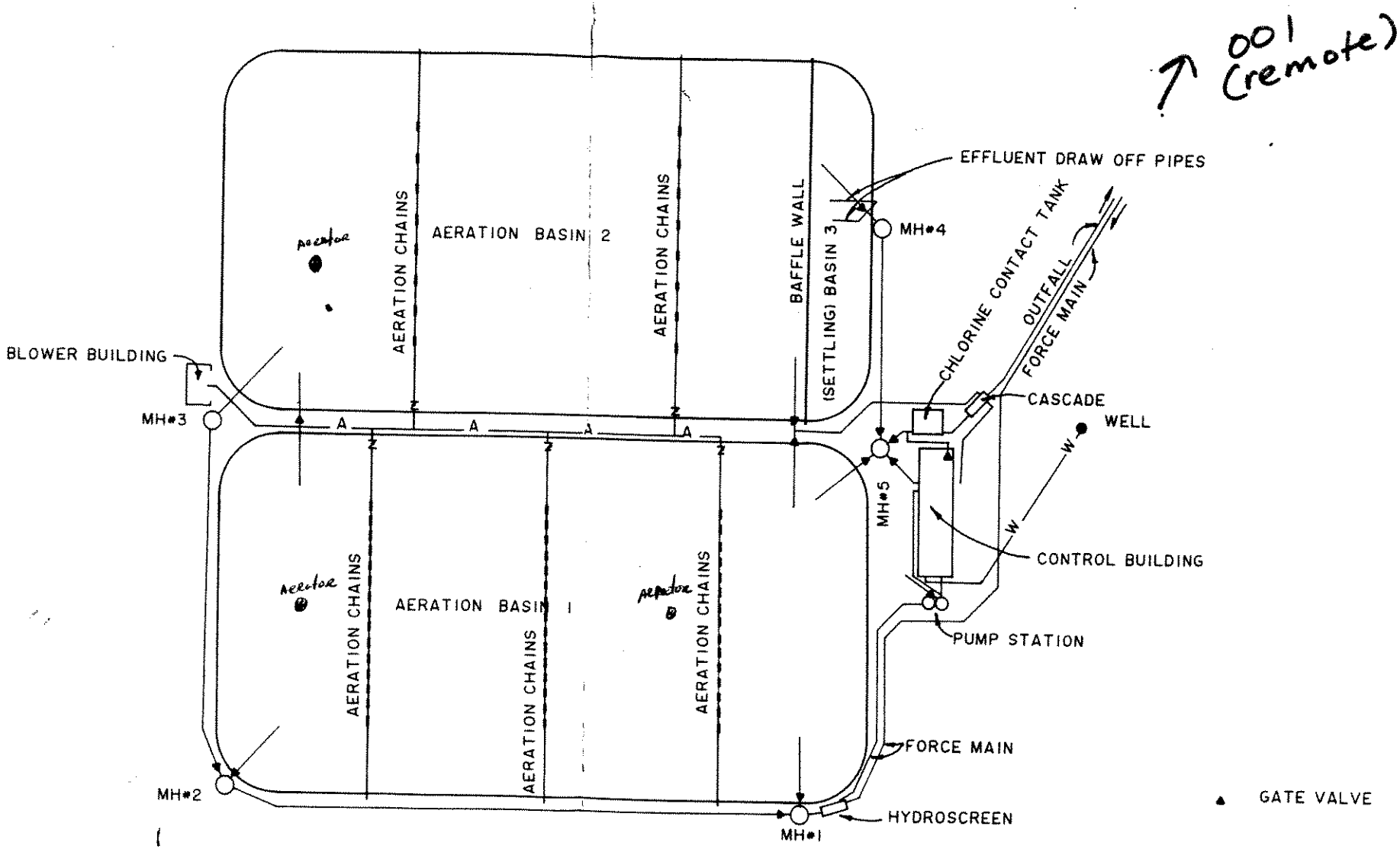


FIGURE 1
SEWAGE TREATMENT PLANT LAYOUT

B & B Consultants, Inc.

Attachment C- Sludge Application Cover Letter (Sludge Management Plan)

Sussex Service Authority

4385 Beef Steak Road
Waverly, Virginia 23890
Phone: (804) 834-8930
Fax: (804) 834-8933

September 13, 2010

Stony Creek WWTP: Permit # VA0062669

Dear Emilee Carpenter:

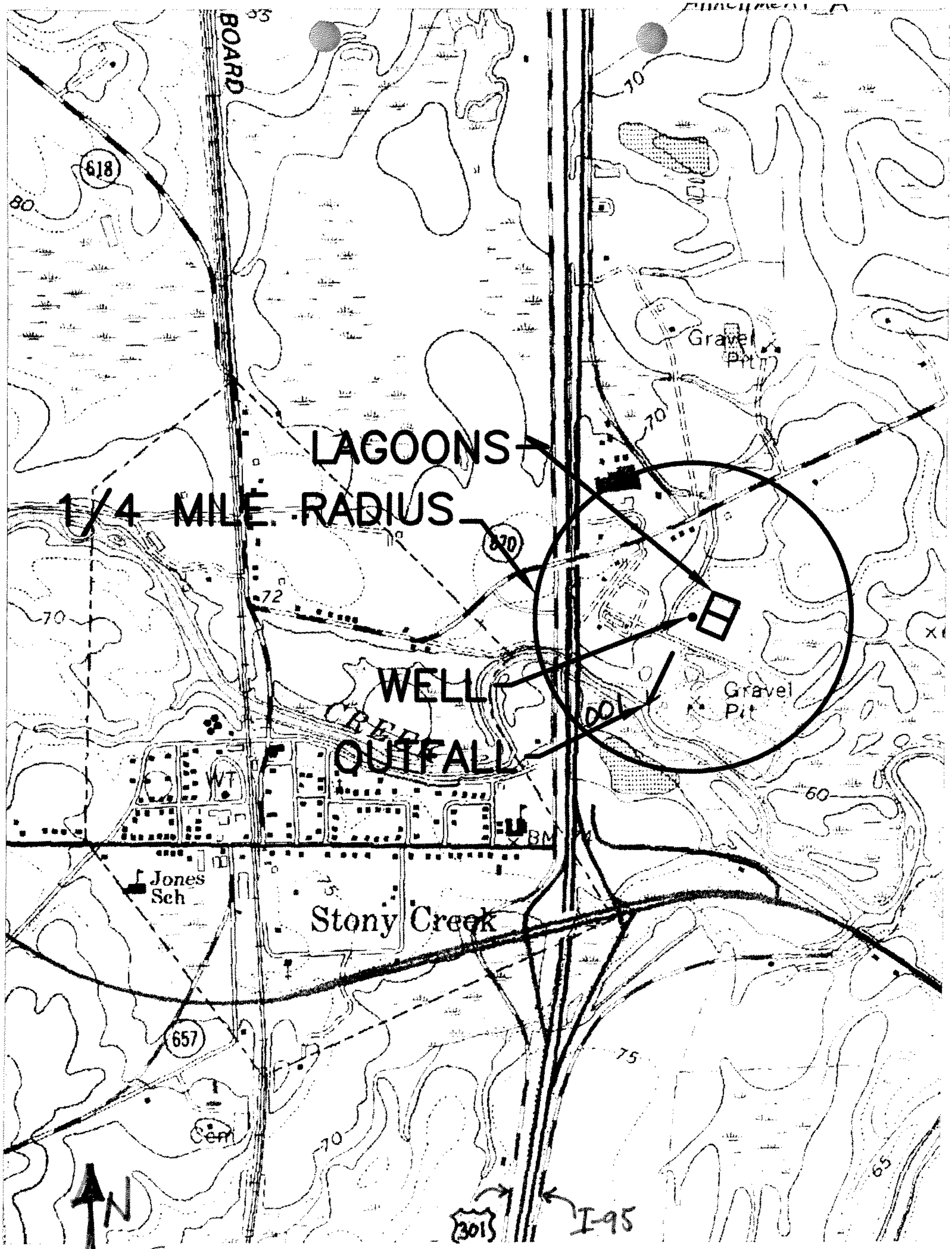
I'm writing to explain the sludge permit application. The treatment plant consists of two lagoons that work in series. I don't foresee that the plant will need to dispose of any sludge that it produces in this permit cycle. The operators check the sludge depth levels in the lagoons periodically and the levels are low. When the time comes to remove sludge from the lagoons the first lagoon will have to be bypassed and the flow diverted to the second. Then the water will be pumped off the first lagoon and the sludge pumped and hauled to our Black Swamp WWTP, where it will be aerobically digested and dewatered.

Sincerely,

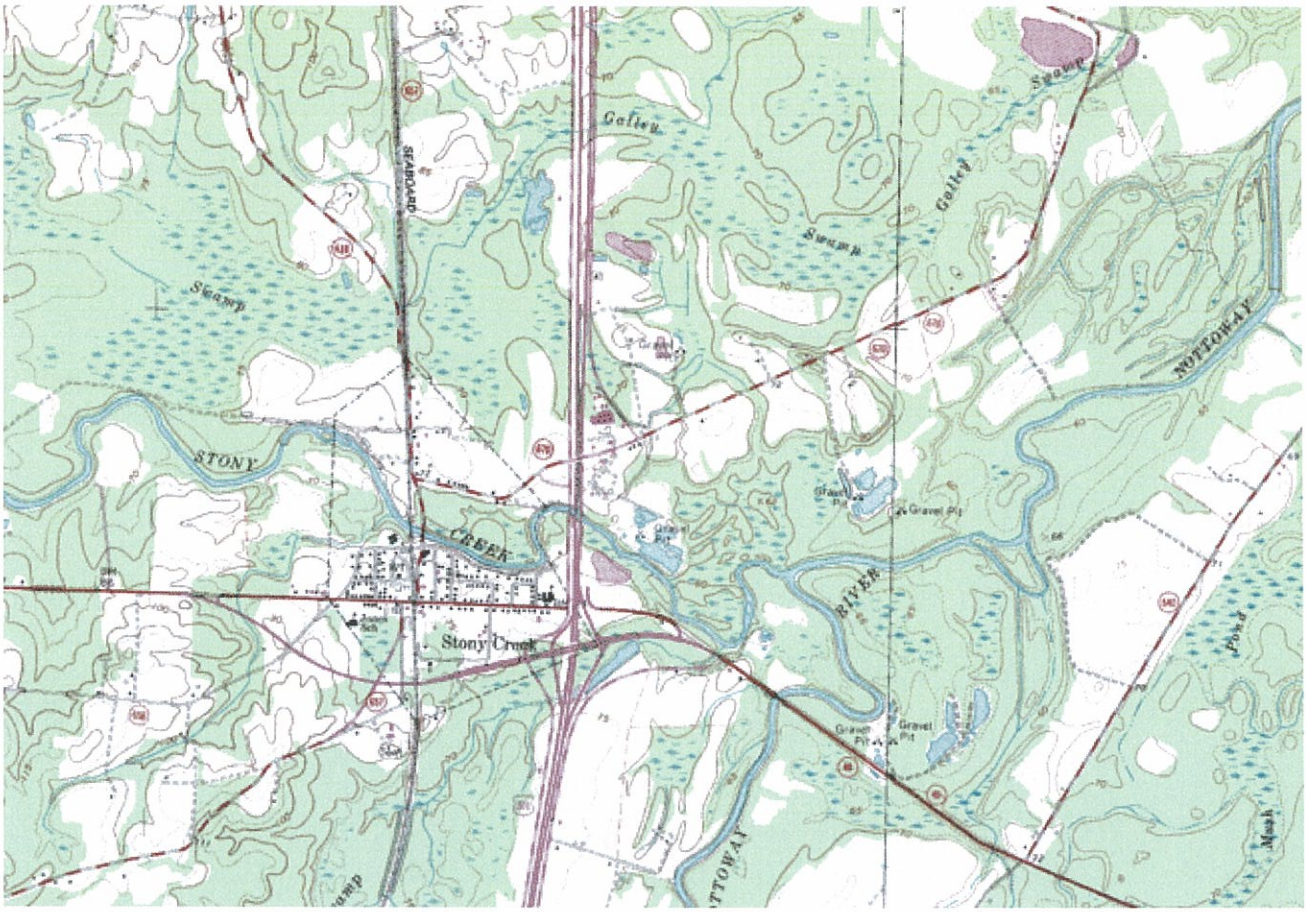
Michael D. Smith
Operations Supervisor

Attachment D- Topographic Maps, Stony Creek Quadrangle (39B)

Attachment A



Stony Creek [illegible] #39B


SEABOARD
Swamp
STONY
CREEK
Stony Creek
Gulley
Swamp
Gulley
Swamp
NOTTOWAY
RIVER
Gravel Pit
Gravel Pit
Gravel Pit
Pond
Marsh

Attachment E- Site Inspection Report

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Wastewater Facility Inspection Report

Facility Name:	Stony Creek STP	**Facility No.:**	VA0062669
City/County:	Sussex	**Inspection Agency:**	DEQ
Inspection Date:	December 20, 2007	**Date Form**	January 9, 2008
Inspector:	Charles Stitzer	**Completed:**	14 hrs. w/ travel & report
Reviewed By:		**Time Spent:**	

Present at Inspection: Robert Joyner, Dickie Thompson

TYPE OF FACILITY:

Domestic		Industrial	
[ ] Federal	[ ] Major	[ ] Major	[ ] Primary
[x] Non-Federal	[x] Minor	[ ] Minor	[ ] Secondary

Population Served: approx.: ~(not ascertained)

Number of Connections: approx.: ~(not ascertained)

TYPE OF INSPECTION:

[x] Routine — Date of last inspection: May 2, 2006

[ ] Compliance — Agency: DEQ/PRO

[ ] Reinspection

EFFLUENT MONITORING: See Compliance File

Last month: BOD: ____ mg/L TSS: ___ mg/L Flow:_____ MGD
(Effluent) Date: See File
Other:

Quarter average: BOD: _____ mg/L TSS: ____ mg/L Flow: _____ MGD
(Effluent) Date: See File
Other:

CHANGES AND/OR CONSTRUCTION

DATA VERIFIED IN PREFACE	[ ] Updated	[x] No changes (equipment replacement)
Has there been any new construction?	[ ] Yes*	[x] No
If yes, were plans and specifications approved?	[ ] Yes	[ ] No* [x] N/A
DEQ approval date:	N/A	

(A) PLANT OPERATION AND MAINTENANCE

1. Class and number of licensed operators: Class I - 1 Class II - 0 Class III - 0, Class IV – 1, Trainee – 1
2. Hours per day plant is staffed: 1-3 hours/day
3. Describe adequacy of staffing: [x] Good [ ] Average [ ] Poor*
4. Does the plant have an established program for training personnel? [x] Yes [ ] No
5. Describe the adequacy of the training program: [x] Good [ ] Average [ ] Poor*
6. Are preventive maintenance tasks scheduled? [x] Yes [ ] No*
7. Describe the adequacy of maintenance: [x] Good [ ] Average [ ] Poor*
8. Does the plant experience any organic/hydraulic overloading? [ ] Yes* [x] No

   If yes, identify cause and impact on plant: N/A

9. Any bypassing since last inspection? [ ] Yes* [x] No
10. Is the on-site electric generator operational? [ ] Yes [ ] No* [x] N/A
11. Is the STP alarm system operational? [X] Yes* [ ] No * [ ] N/A
12. How often is the standby generator exercised? [ ] Weekly [ ] Monthly [ ] Other: N/A

    Power Transfer Switch? [ ] Weekly [ ] Monthly [ ] Other: N/A

    Alarm System? [ ] Weekly [ ] Monthly [ ] Other: N/A
13. When were the cross connection control devices last tested on the potable water service? 2/27/07
14. Is sludge disposed in accordance with the approved sludge disposal plan? [ ] Yes [ ] No* [x] N/A
15. Is septage received by the facility? [ ] Yes [x] No

    Is septage loading controlled? [ ] Yes [ ] No * [x] N/A

    Are records maintained? [ ] Yes [ ] No* [x] N/A
16. Overall appearance of facility: [x] Good [ ] Average [ ] Poor*

Comments: #1 A pool of cross trained SSA operators can be drawn from to insure coverage. #4 Training includes OJT, in-house training, Virginia Rural Water Association training, DEQ Training Manuals, and DEQ Lab Workshops. #11 alarm (w/ dialer) is for power loss only. #s 10&12 - There is no emergency generator or alternate power source on-site. If power is lost, plant simply stops functioning, including discharge.

(B) PLANT RECORDS

1. Which of the following records does the plant maintain?			
Operational Logs for each unit process	[x] Yes	[ ] No*	[ ] N/A
Instrument maintenance and calibration	[x] Yes	[ ] No*	[ ] N/A
Mechanical equipment maintenance	[x] Yes	[ ] No*	[ ] N/A
Industrial waste contribution **(Municipal Facilities)**	[ ] Yes	[ ] No*	[x] N/A
2. What does the operational log contain?			
Visual Observations	[x] Yes	[ ] No	[ ] N/A
Flow Measurement	[x] Yes	[ ] No	[ ] N/A
Laboratory Results	[x] Yes	[ ] No	[ ] N/A
Process Adjustments	[x] Yes	[ ] No*	[ ] N/A
Control Calculations	[x] Yes	[ ] No	[ ] N/A
Other:			
3. What do the mechanical equipment records contain:			
As built plans and specs?	[x] Yes	[ ] No*	[ ] N/A
Spare parts inventory?	[x] Yes	[ ] No*	[ ] N/A
Manufacturers instructions?	[x] Yes	[ ] No*	[ ] N/A
Equipment/parts suppliers?	[x] Yes	[ ] No*	[ ] N/A
Lubrication schedules?	[x] Yes	[ ] No*	[ ] N/A
Other:			
Comments:	None		
4. What do the industrial waste contribution records contain:	***(Applicable to municipal facilities only)***		
	[ ] Yes	[ ] No*	[x] N/A
Waste characteristics?	[ ] Yes	[ ] No*	[x] N/A
Locations and discharge types?	[ ] Yes	[ ] No*	[x] N/A
Impact on plant?	N/A		
Other:	None		
Comments:			
5. Are the following records maintained at the plant:	[x] Yes	[ ] No*	[ ] N/A
Equipment maintenance records	[x] Yes	[ ] No*	[ ] N/A
Operational Log	[ ] Yes	[ ] No*	[x] N/A
Industrial contributor records	[x] Yes	[ ] No*	[ ] N/A
Instrumentation records	[x] Yes	[ ] No*	[ ] N/A
Sampling and testing records			
	[x] Yes	[ ] No	
6. Are records maintained at a different location?	Records are available on site and at Black Swamp.		
Where are the records maintained?			
7. Were the records reviewed during the inspection?	[x] Yes	[ ] No	
8. Are the records adequate and the O & M Manual current?	[ ] Yes	[x] No*	[ ] N/A
O&M Manual date written: pre-1991			
Date DEQ approved O&M: approved by VDH 3/20/91	[x] Yes	[ ] No*	
9. Are the records maintained for required 3-year period?			

Comments: None

(C) SAMPLING

1. Are sampling locations capable of providing representative samples?	[x] Yes	[ ] No*	[ ] N/A
2. Do sample types correspond to those required by the permit?	[x] Yes	[ ] No*	[ ] N/A
3. Do sampling frequencies correspond to those required by the permit?	[ ] Yes	[ ] No*	[x] N/A
4. Are composite samples collected in proportion to flow?	[x] Yes	[ ] No*	[ ] N/A
5. Are composite samples refrigerated during collection?	[x] Yes	[ ] No*	[ ] N/A
6. Does plant maintain required records of sampling?	[x] Yes	[ ] No*	[ ] N/A
7. Does plant run operational control tests?	[x] Yes	[ ] No*	[ ] N/A

Comments: Please see enclosed DEQ *Laboratory Inspection Report*.

(D) TESTING

1. Who performs the testing?
   [x] Plant/ Lab
   [ ] Central Lab
   [x] Commercial Lab - Name: Air, Water and Soil Lab, 2107 N. Hamilton Street, Richmond, VA

If plant performs any testing, complete 2-4.

2. What method is used for chlorine analysis?	HACH Pocket Colorimeter		
3. Is sufficient equipment available to perform required tests?	[x] Yes	[ ] No*	[ ] N/A
4. Does testing equipment appear to be clean and/or operable?	[x] Yes	[ ] No*	[ ] N/A

Comments: Please see enclosed DEQ *Laboratory Inspection Report*.

(E) FOR INDUSTRIAL FACILITIES W/ TECHNOLOGY BASED LIMITS N/A

1. Is the production process as described in the permit application? (If no, describe changes in comments)

   [ ] Yes [ ] No* [x] N/A

2. Do products and production rates correspond to the permit application? (If no, list differences in comments section)

   [ ] Yes [ ] No* [x] N/A

3. Has the State been notified of the changes and their impact on plant effluent?

   [ ] Yes [ ] No* [x] N/A

Comments: None

FOLLOW UP TO COMPLIANCE RECOMMENDATIONS FROM THE MAY 2, 2006 DEQ INSPECTION:

RPZ certification out-of date. **CORRECTED**

FOLLOW UP TO GENERAL RECOMMENDATIONS FROM THE OCTOBER 30, 2003 DEQ INSPECTION:

1. Duckweed cover is heavy but should not be a problem if aerated sides of basin can be kept relatively clear. If effluent quality deteriorates, try clearing duckweed from aerated sections. **Annual die off apparent at winter inspection**

2. Continue, and increase if possible, I&I reduction efforts. **I&I reduction program continues**

INSPECTION REPORT SUMMARY

Compliance Recommendations/Request for Corrective Action:

There are no Compliance Recommendations this inspection

General Recommendations/Observations:

1. Keep an eye on rodent burrows on top of lagoon berms. They appear to be shallow and of minor consequence, however, take appropriate action to protect the berm's integrity, if determined necessary.

2. Repair the effluent flow meter's scrolling chart or establish another way to record effluent flows. Make sure that you indicate how you measure and record your flow on your DMR.

Comments:

Items evaluated during this inspection include (check all that apply):

[x] Yes	[ ] No		Operational Units
[x] Yes	[ ] No		O & M Manual
[ ] Yes	[x] No		Maintenance Records
[ ] Yes	[ ] No	[x] N/A	Pathogen Reduction & Vector Attraction Reduction
[ ] Yes	[ ] No	[x] N/A	Sludge Disposal Plan
[ ] Yes	[x] No	[ ] N/A	Groundwater Monitoring Plan
[ ] Yes	[ ] No	[x] N/A	Storm Water Pollution Prevention Plan
[x] Yes	[ ] No	[ ] N/A	Permit Special Conditions
[ ] Yes	[x] No	[ ] N/A	Permit Water Quality Chemical Monitoring
[x] Yes	[ ] No	[ ] N/A	Laboratory Records (see Lab Report)

Pump Stations

3 pump stations serve the town. Each station is a duplex system with 10 hp. vacuum prime pumps. Alarms in pump stations are equipped with a high level alarm with battery backup. The stations were not inspected at this inspection. SSA staff checks pump stations twice a week.

UNIT PROCESS: Screening/Comminution

1.	Number of units:	Manual: 0		Mechanical: 1
	Number of units in operation:	Manual: 0		Mechanical: 1
2.	Bypass channel provided?	[ ] Yes	[x] No	
	Bypass channel in use?	[ ] Yes	[ ] No	[x] N/A
3.	Area adequately ventilated?	[x] Yes	[ ] No*	
4.	Alarm system for equipment failure or overloads?	[ ] Yes	[ ] No	[x] N/A
	If present, is the alarm system operational?	[ ] Yes	[ ] No *	[x] N/A
5.	Proper flow distribution between units?	[ ] Yes	[ ] No *	[x] N/A
6.	How often are units checked and cleaned?	daily		
7.	Cycle of operation:	continuous		
8.	Volume of screenings removed:	~ 5 gal. Bucket/week		
9.	General condition:	[x] Good	[ ] Fair	[ ] Poor*

Comments: #1 A hydroscreen is located at the edge of the primary lagoon.

UNIT PROCESS: Ponds/Lagoons

1.	Type:	[x] Aerated	[ ] Unaerated	[ ] Polishing	
2.	No. of cells:	2			
	Number in Operation:	2			
3.	Color:	[ ] Green	[ ] D. Brown	[x] L. Brown	[ ] Grey
		[ ] Other			
4.	Odor:	[ ] Septic *	[x] Earthy	[ ] None	
		[ ] Other:			
5.	System operated in:	[x] Series	[ ] Parallel	[ ] N/A	
6.	If aerated, are lagoon contents mixed adequately?	[x] Yes	[ ] No *	[ ] N/A	
7.	If aerated, is aeration system operating properly?	[x] Yes	[ ] No *	[ ] N/A	
8.	Evidence of following problems:				
	a. vegetation in lagoon or dikes?	[ ] Yes *	[x] No		
	b. rodents burrowing on dikes?	[x] Yes *	[ ] No		
	c. erosion?	[ ] Yes *	[x] No		
	d. sludge bars?	[ ] Yes *	[x] No		
	e. excessive foam?	[ ] Yes *	[x] No		
	f. floating material?	[ ] Yes *	[x] No		
9.	Fencing intact?	[x] Yes	[ ] No *		
10.	Grass maintained properly:	[x] Yes	[ ] No		
11.	Level control valves working properly?	[x] Yes	[ ] No *	[ ] N/A	
12.	Effluent discharge elevation:	[x] Top	[ ] Middle	[ ] Bottom	
13.	Available freeboard:	1.5 ft.			
14.	Appearance of effluent:	[x] Good	[ ] Fair	[ ] Poor *	
15.	Are monitoring wells present?	[x] Yes	[ ] No		
	Are wells adequately protected from runoff?	[x] Yes	[ ] No *	[ ] N/A	
	Are caps on and secured?	[x] Yes	[ ] No *	[ ] N/A	
16.	General condition:	[x] Good	[ ] Fair	[ ] Poor*	

Comments: #6 - The diffused aeration serves to provide dissolved oxygen and <u>some</u> mixing; not complete mixing. Mechanical aerators provide aeration in the most aerobically active section of the lagoon. Two blowers, alternated, provide pressure to the additional diffused air system. #8b There is lots of evidence of mole burrows on top of the lagoon. They do not appear to be causing any problems at this time, but operations staff should be aware of the potential for leakage through these burrows if the lagoon level rises.

UNIT PROCESS: Filtration

1.	Type of filters:	[x] Gravity	[ ] Pressure	[ ] Intermittent
2.	Number of units:	1		
	Number in operation:	1		
3.	Operation of system:	[x] Automatic	[ ] Semi-automatic	
		[ ] Manual	[ ] Other (specify):	
4.	Proper flow-distribution between units?	[ ] Yes	[ ] No*	[x] N/A
5.	Evidence of following problems:			
	a. Uneven flow distribution?	[ ] Yes*	[x] No	[ ] N/A
	b. Filter clogging (ponding)?	[ ] Yes*	[x] No	[ ] N/A
	c. Nozzles clogging?	[ ] Yes*	[ ] No	[x] N/A
	d. Icing?	[ ] Yes*	[x] No	[ ] N/A
	e. Filter flies?	[ ] Yes*	[x] No	[ ] N/A
	f. Vegetation on filter?	[ ] Yes*	[x] No	[ ] N/A
6.	Filter aid system provided?	[ ] Yes	[x] No	
	Properly operating?	[ ] Yes	[ ] No*	[x] N/A
	Chemical used:			
7.	Automatic valves properly operating?	[x] Yes	[ ] No*	[ ] N/A
8.	Valves sequencing correctly?	[x] Yes	[ ] No*	[ ] N/A
9.	Backwash system operating properly?	[x] Yes	[ ] No*	[ ] N/A
10.	Filter building adequately ventilated?	[x] Yes	[ ] No*	[ ] N/A
11.	Effluent characteristics:	Clear		
12.	General condition:	[x] Good	[ ] Fair	[ ] Poor*

Comments: #1 Flow from the secondary lagoon enters a sump that is pumped to the AquaDisk microfilter. Should flow from the lagoon exceed the capacity of the microscreen unit (0.04 MGD) excess flow bypasses the sump (and microfilter) and enters the chlorine contact tank. #9 – Wastewater from chlorine contact tank is used for backwash.

UNIT PROCESS: Chlorination

1. Number of chlorinators:	1
Number in operation:	1
2. Number of evaporators:	0
Number in operation:	0
3. Number of chlorine contact tanks:	1
Number in operation:	1
4. Proper flow distribution between units?	[x] Yes [ ] No * [ ] N/A
5. How is chlorine introduced into the wastewater?	[ ] Perforated diffusers [ ] Injector with single entry point [x] Other (Tablet system)
6. Chlorine residual in basin effluent:	1.48 mg/L @ 0900 hrs
7. Applied chlorine dosage:	4 of 4 tubes of tablets in use
8. Contact basins adequately baffled?	[x] Yes [ ] No * [ ] N/A
9. Adequate ventilation in:	
a. Chemical storage area?	[x] Yes [ ] No * [ ] N/A
b. Equipment room?	[ ] Yes [ ] No * [x] N/A
10. Proper safety precautions used?	[x] Yes [ ] No *
11. General condition:	[x] Good [ ] Fair [ ] Poor*

Comments: Should flow from the lagoon exceed the capacity of the microscreen unit (0.04 MGD) excess flow bypasses filtration and enters the chlorine contact tank. # 6 Staff adds or subtracts tubes as necessary to insure adequate disinfection.

UNIT PROCESS: Dechlorination

1.	Chemical used:	[ ] Sulfur Dioxide [ ] Bisulfite [x] Other Sodium sulfite
2.	Number of sulfonators:	0
	Number in operation:	0
3.	Number of evaporators:	0
	Number in operation:	0
4.	Number of chemical feeders:	1
	Number in operation:	1
5.	Number of contact tanks:	0
	Number in operation:	0
6.	Proper flow distribution between units?	[ ] Yes [ ] No * [x] N/A
7.	How is chemical introduced?	[ ] Perforated diffusers [ ] Injector with single entry point [x] Other (Tablet system)
8.	Control system operational?	[x] Yes [ ] No *
	a. Residual analyzers?	[ ] Yes [ ] No * [x] N/A
	b. System adjusted:	[ ] Automatic [x] Manual [ ] Other:
9.	Applied dechlorinating dose:	3 of 4 tubes of tablets in use
10.	Chlorine residual in basin effluent:	>0.05 mg/L @ 0948
11.	Contact basins adequately baffled?	[ ] Yes [ ] No * [x] N/A
12.	Adequate ventilation in:	[x] Yes [ ] No *
	a. Chemical storage area?	[ ] Yes [ ] No * [x] N/A
	b. Equipment room?	
13.	Proper safety precautions used?	[x] Yes [ ] No *
14.	General condition:	[x] Good [ ] Fair [ ] Poor*

Comments: None

UNIT PROCESS: Flow Measurement

[ ] Influent [ ] Intermediate [x] Effluent

1. Type measuring device:	ISCO 4210 ultrasonic flow meter & 60° V-Notch Weir with totalizer, indicator, recording equipment		
2. Present reading:	22.3 GPM @ 0928 hrs		
3. Bypass channel?	[ ] Yes	[x] No	
Metered?	[ ] Yes	[ ] No*	[x] N/A
4. Return flows discharged upstream from meter?	[ ] Yes	[x] No	
N/A			
If Yes, identify:			
	[ ] Yes	[x] No*	
5. Device operating properly?			
	[x] Good	[ ] Fair	[ ] Poor*
6. Date of last calibration:	August 06, 2007		
7. Evidence of following problems:	[ ] Yes*	[x] No	
a. Obstructions?	[ ] Yes*	[x] No	
b. Grease?			
8. General condition:			

Comments: #5 Paper scroll on automatic pH meter was inoperative. It was printing over itself. Mr. Thompson informed me that he hoped to cannibalize another meter for parts to get this one back in operation. Until then, I advised him to take daily readings so that approximate flows could be calculated.

UNIT PROCESS: Post Aeration

1. Number of units: 1
   Number of units in operation: 1

2. Proper flow-distribution between units? [ ] Yes [ ] No* [x] N/A

3. Evidence of following problems:

a. Dead spots? [ ] Yes* [x] No

b. Excessive foam? [ ] Yes* [x] No

c. Poor aeration? [ ] Yes* [x] No

d. Mechanical equipment failure? [ ] Yes* [ ] No [x] N/A

4. How is the aerator controlled? [ ] Time clock [ ] Manual [x] Continuous
   [ ] Other Float Switch activated [ ] N/A

5. What is the current operating schedule? Continuous

6. Step weirs level? [x] Yes [ ] No* [ ] N/A

7. Effluent D.O. level: 12.03 mg/L @ 0946 hrs

8. General condition: [x] Good [ ] Fair [ ] Poor*

Comments: #1 – A step cascade unit is followed by compressed air post aeration.

UNIT PROCESS: Effluent/Plant Outfall

1. Type outfall: [X] Shore based [ ] Submerged

2. Type if shore based: [X] Wingwall [ ] Headwall [ ] Rip Rap [ ] N/A

3. Flapper valve? [X] Yes [ ] No

4. Erosion of bank? [ ] Yes* [X] No [ ] N/A

5. Effluent plume visible? [ ] Yes * [X] No

Comments: Outfall accessible from Setzer and Smith concrete casting company's adjacent property. Outfall structure in good condition.

6. Condition of outfall and supporting structures: [X] Good [ ] Fair [ ] Poor *

7. Final effluent, evidence of following problems:

   a. Oil sheen? [ ] Yes* [x] No

   b. Grease? [ ] Yes* [x] No

   c. Sludge bar? [ ] Yes* [x] No

   d. Turbid effluent? [ ] Yes* [x] No

   e. Visible foam? [ ] Yes* [x] No

   f. Unusual odor? [ ] Yes* [x] No

Comments: No problems noted at outfall.

cc:

[x] Owner: Robert Gunnell c/o Sussex Service Authority

[ ] Operator:

[ ] Local Health Department:

[ ] VDH Engineering Field Office:

[ ] VDH/Central Office - DWE

[x] DEQ - OWCP, attn: Steve Stell

[x] DEQ - Regional Office File

[ ] EPA - Region III

Attachment F- MSTRANTI Data Source, Mixing Zone Analysis (Version 2.1), Station 5ASTO001.20 data, DMR Data, MSTRANTI, Stats.exe

MSTRANTI DATA SOURCE REPORT

Stream information	
Mean Hardness	Monitoring station 5ASTO001.20 data
90% Temperature (annual)	Monitoring station 5ASTO001.20 data
90% Temperature (wet season)	Monitoring station 5ASTO001.20 data
90% Maximum pH	Monitoring station 5ASTO001.20 data
10% Maximum pH	Monitoring station 5ASTO001.20 data
Tier Designation	Tier Determination (Flow Frequency Memo)
Stream Flows	
All Data	Flow Frequency Determination (Memo)
Mixing Information	
All Data	100% for all flows, based on Virginia DEQ Mixing Zone Analysis Version 2.1
Effluent Information	
Mean Hardness	Calculated Lab Report of Analysis data submitted with application
90% Temperature (annual)	Tabulated effluent data submitted with application
90% Maximum pH	DMR data
10% Maximum pH	DMR data
Discharge flow	Application Form 2A- A.6. (0.04 MGD)

Data Location:

Flow Frequency Memo – Attachment A
DMR Data – Attachment F
5ASTO001.20 data- Attachment F

Mixing Zone Analysis (Virginia DEQ Mixing Zone Analysis Version 2.1)

Mixing Zone Predictions for Stony Creek WWTF

Effluent Flow = 0.04 MGD
Stream 7Q10 = 0.28 MGD
Stream 30Q10 = 0.72 MGD
Stream 1Q10 = 0.23 MGD
Stream slope = 0.00056 ft/ft
Stream width = 8 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .3869 ft
Length = 126.78 ft
Velocity = .16 ft/sec
Residence Time = .0092 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .6664 ft
Length = 77.34 ft
Velocity = .2207 ft/sec
Residence Time = .0041 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .3479 ft
Length = 139.43 ft
Velocity = .1501 ft/sec
Residence Time = .2581 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Ambient Monitoring Station 5ASTO001.20 data

Station ID	Collection Date	Temp Celsius	Field Ph
5ASTO001.20	9/13/1990	22.8	6.62
5ASTO001.20	12/5/1990	8.1	7.53
5ASTO001.20	12/5/1990	8.1	7.53
5ASTO001.20	3/28/1991	17.05	6.56
5ASTO001.20	3/28/1991		
5ASTO001.20	6/19/1991	23.96	6.4
5ASTO001.20	9/19/1991	25.58	6.04
5ASTO001.20	12/19/1991	2.94	6.64
5ASTO001.20	3/18/1992	9.02	5.33
5ASTO001.20	6/22/1992	18.97	6
5ASTO001.20	9/21/1992	21.38	6.33
5ASTO001.20	12/8/1992	4.57	6.6
5ASTO001.20	3/16/1993	3.16	5.76
5ASTO001.20	6/9/1993	22.55	6.18
5ASTO001.20	9/23/1993	22.42	6.67
5ASTO001.20	12/15/1993	4.43	6.17
5ASTO001.20	3/14/1994	9.31	6
5ASTO001.20	6/13/1994	23.13	6.7
5ASTO001.20	7/12/1994	26.36	6.98
5ASTO001.20	9/15/1994	20.67	6.49
5ASTO001.20	10/6/1994	16.73	6.82
5ASTO001.20	1/23/1995	4.96	6.68
5ASTO001.20	4/11/1995	13.94	6.66
5ASTO001.20	7/5/1995	23.01	5.91
5ASTO001.20	10/2/1995	17.89	6.44
5ASTO001.20	1/4/1996	4.01	6.35
5ASTO001.20	4/9/1996	10.01	6.18
5ASTO001.20	7/16/1996	24.21	6.09
5ASTO001.20	10/28/1996	15.26	6.19
5ASTO001.20	1/29/1997	4.83	6.03
5ASTO001.20	4/24/1997	10.4	6.66
5ASTO001.20	9/18/1997	22.44	6.92
5ASTO001.20	9/18/1997	22.08	6.74
5ASTO001.20	11/13/1997	9.28	6.43
5ASTO001.20	1/13/1998	8.01	6.21
5ASTO001.20	3/9/1998	13.58	5.74
5ASTO001.20	5/21/1998	20.69	6.63
5ASTO001.20	7/23/1998	27.5	6.64
5ASTO001.20	9/29/1998	22.41	6.57
5ASTO001.20	11/30/1998	9.54	6.49
5ASTO001.20	1/20/1999	6.25	5.92
5ASTO001.20	3/29/1999	11.67	6.09
5ASTO001.20	5/24/1999	21.14	6.59
5ASTO001.20	7/13/1999	21.02	6.62
5ASTO001.20	9/2/1999	20.79	6.35
5ASTO001.20	11/8/1999	9.57	5.56

Station ID	Collection Date	Temp Celsius	Field Ph
5ASTO001.20	1/12/2000	8.62	6.17
5ASTO001.20	3/20/2000	10.65	6.2
5ASTO001.20	5/15/2000	21.51	6.46
5ASTO001.20	7/24/2000	21.94	5.64
5ASTO001.20	9/7/2000	19.49	5.84
5ASTO001.20	11/15/2000	9.24	7.05
5ASTO001.20	1/9/2001	1.07	6.13
5ASTO001.20	3/8/2001	5.68	6.48
5ASTO001.20	6/20/2001	22.07	6.51
5ASTO001.20	8/27/2001	24.41	6.8
5ASTO001.20	10/9/2001	13.07	6.45
5ASTO001.20	12/20/2001	8.1	6.39
5ASTO001.20	2/25/2002	7.14	6.71
5ASTO001.20	4/18/2002	22.83	6.64
5ASTO001.20	7/2/2002	25.01	6.47
5ASTO001.20	7/30/2002	28.18	6.71
5ASTO001.20	9/5/2002	23.65	6.63
5ASTO001.20	11/25/2002	7.38	6.04
5ASTO001.20	1/30/2003	1.48	6.62
5ASTO001.20	3/27/2003	14.48	6.24
5ASTO001.20	5/22/2003	16.17	5.74
5ASTO001.20	7/14/2003	25.05	6.83
5ASTO001.20	9/29/2003	19.71	6.4
5ASTO001.20	12/1/2003	8.37	6.87
5ASTO001.20	1/29/2004	0.26	6.88
5ASTO001.20	3/16/2004	11.37	6.11
5ASTO001.20	5/25/2004	24.53	6.59
5ASTO001.20	8/24/2004	22.53	6.49
5ASTO001.20	10/13/2004	14.07	6.67
5ASTO001.20	12/8/2004	10.2	6.64
5ASTO001.20	2/14/2005	6.37	7.27
5ASTO001.20	4/25/2005	13.28	6.9
5ASTO001.20	6/13/2005	26.61	6.83
5ASTO001.20	8/25/2005	24.39	7.02
5ASTO001.20	10/20/2005	18.64	7.54
5ASTO001.20	12/12/2005	4.21	7.21
5ASTO001.20	2/16/2006	7.09	6.83
5ASTO001.20	4/19/2006	17.4	6.8
5ASTO001.20	6/27/2006	26.3	7
5ASTO001.20	8/16/2006	26.5	7.1
5ASTO001.20	10/11/2006	16.4	6
5ASTO001.20	12/19/2006	7.9	6.8
5ASTO001.20	1/16/2007	11.7	6.6
5ASTO001.20	3/8/2007	6.3	6.8
5ASTO001.20	5/16/2007	19	7.1
5ASTO001.20	7/12/2007	26.2	7.1
5ASTO001.20	9/13/2007	23.9	7.1
5ASTO001.20	11/19/2007	8.4	7.2
5ASTO001.20	1/14/2008	6.9	7.3

Station ID	Collection Date	Temp Celsius	Field Ph
5ASTO001.20	3/3/2008	7	7
5ASTO001.20	5/13/2008	13.5	6.2
5ASTO001.20	7/8/2008	25.2	7
5ASTO001.20	9/24/2008	18.6	7.1
5ASTO001.20	11/17/2008	11.4	6.1
5ASTO001.20	2/4/2009	3.7	6.8
5ASTO001.20	4/7/2009	14.1	7
5ASTO001.20	6/3/2009	23.5	6.9
5ASTO001.20	8/4/2009	26.4	7
5ASTO001.20	10/6/2009	17.1	7
5ASTO001.20	12/2/2009	7.9	6.8
5ASTO001.20	1/5/2010	0.2	7.1
5ASTO001.20	3/2/2010	5.5	7.2
5ASTO001.20	5/12/2010	15.3	7.2
90th Percentile		**25.0**	**7.1**
10th Percentile		**4.8**	**6.0**

Stream Hardness Data (5ASTO001.20 ambient monitoring)

Collection Date and Time	Total Hardness (mg/L) as CACO3
09/13/1990 10:25	46
12/05/1990 09:35	32
03/28/1991 10:00	16
06/19/1991 10:35	43
09/19/1991 10:20	58
12/19/1991 09:30	22
03/18/1992 09:35	25
06/22/1992 09:50	31
09/21/1992 09:41	31
12/08/1992 09:40	26
03/16/1993 10:20	22
06/09/1993 10:10	19
09/23/1993 12:00	44
12/15/1993 10:00	38
03/14/1994 10:55	14
06/13/1994 10:55	25
07/12/1994 11:22	32
10/06/1994 14:24	24
01/23/1995 10:44	19
04/11/1995 10:10	20
07/05/1995 12:23	16
10/02/1995 09:30	26
01/04/1996 09:30	18
04/09/1996 12:00	16
07/16/1996 10:45	22
10/28/1996 08:28	20
01/29/1997 10:15	16.4

Collection Date and Time	Total Hardness (mg/L) as CACO3
04/24/1997 09:30	23.4
07/16/1997 10:45	32.7
09/18/1997 12:45	25.7
11/13/1997 12:00	22
01/13/1998 11:30	15.6
03/09/1998 11:30	14
05/21/1998 11:30	12.8
07/23/1998 08:30	34.1
09/29/1998 09:22	29.4
11/30/1998 11:00	24
01/20/1999 10:45	24
03/29/1999 12:00	26
05/24/1999 12:00	36
07/13/1999 10:08	26.4
09/02/1999 12:00	19.3
11/08/1999 10:30	11.9
01/12/2000 12:00	20.1
03/20/2000 11:45	15
05/15/2000 13:20	23
07/24/2000 11:40	17
09/07/2000 11:15	16.1
11/15/2000 11:05	33.6
01/09/2001 09:40	15.8
03/08/2001 09:40	10
06/20/2001 10:30	8.5
08/27/2001 12:00	14.2
10/09/2001 12:00	35.7
12/20/2001 10:40	15.5
02/25/2002 11:30	14
04/18/2002 10:00	23.6
07/02/2002 11:25	30.1
07/30/2002 10:15	30.7
09/05/2002 11:00	25.9
11/25/2002 10:30	107
01/30/2003 11:30	23.1
03/27/2003 11:30	15.2
07/14/2003 13:45	14.1
09/29/2003 11:45	14.5
12/01/2003 11:00	22
01/29/2004 11:37	19
03/16/2004 10:20	16.6
05/25/2004 10:05	28
08/24/2004 11:30	10
10/13/2004 12:00	50
12/08/2004 11:00	20
02/14/2005 09:35	18
04/25/2005 10:25	22.9

Collection Date and Time	Total Hardness (mg/L) as CACO3
06/13/2005 15:30	22
08/25/2005 10:40	28
10/20/2005 14:25	30
12/12/2005 13:40	21
02/16/2006 15:45	10
04/19/2006 14:35	26
06/27/2006 13:20	26
08/16/2006 11:45	26
10/11/2006 14:20	12
12/19/2006 13:30	14
01/16/2007 10:30	16
Average:	**24.2**

Effluent Hardness Data

Sample Date	Total Hardness (mg/L) as CACO3
11/17/08	48
1/14/09	57
2/3/09	58
4/24/09	62
	Average: 56

Note: this data was reported as multiple “Report of Analysis” attachments to the permit application. The average hardness was calculated and used in MSTRANTI. James R. Reed & Associates was the contracted lab which ran the tests.

Temperature Data

Sample Date	Temperature (°C)
1/18/2007	7.6
4/24/2007	15.4
7/5/2007	24.2
10/18/2007	17.8
1/17/2008	4.6
4/17/2008	13.8
7/8/2008	25.4
10/15/2008	18.3
1/8/2009	4.7
4/16/2009	12.8
7/9/2009	24
10/8/2009	17.2
Calculated 90% (Annual) Temperature:	24.18

This tabulated temperature data was submitted in supplement to the application. The calculated 90% annual temperature was used in the Effluent Information section of MSTRANTI. 90% Temperature (Wet season) was filled out as NA for both effluent and stream because DEQ did not have appropriate seasonal information to accurately calculate this value. This omitted value did not impact the acute or chronic wasteload allocations.

Application Data for Effluent (Form 2A)

Parameter	Max Daily Value		Avg Daily Value		
	Value	Units	Value	Units	# of samples
pH (Minimum)	7.46	SU			
pH (Maximum)	8.29	SU			
Flow Rate	.1646	MGD	0.032	MGD	12
Temperature (Winter)	18.3	°C	11.7	°C	3
Temperature (Summer)	25.4	°C	19.27	°C	3
BOD5	36	mg/l	18.45	mg/l	6
Fecal Coliform	500	N/100ml	105	N/100ml	3
Total Suspended Solids	14	mg/l	8.41	mg/l	5

Fecal Coliform Effluent Data

Date	Fecal Count (N/100ml)	Flow (MGD)
11/17/2008	2	0.014
1/14/2009	22	0.070
2/9/2009	4	0.018
2/24/2009	2	0.027
9/30/2009	130	0.034
11/4/2009	500	0.029
11/18/2009	170	0.070
1/15/2010	11	0.017
Minimum	2	0.014
Maximum	500	0.070
Average	105	0.035

DMR Data*

	FLOW		pH	
Due Date	Quant Avg	Quanti Max	Conc Min	Conc Max
04/10/07	0.0279	0.0601	7.7	7.9
05/10/07	0.0358	0.0934	7.5	8
06/10/07	NULL	NULL	NULL	NULL
07/10/07	0.0372	0.0458	7.6	7.9
08/10/07	0.04	0.059	7.54	7.88
09/10/07	0.039	0.043	7.58	7.96
10/10/07	0.024	0.03	7.78	8.53
11/10/07	0.03	0.054	7.55	8.38
12/10/07	0.031	0.042	7.17	7.99
01/10/08	0.031	0.097	7.59	7.92
02/10/08	0.034	0.06	7.63	7.98
03/10/08	0.03	0.046	7.8	7.99
04/10/08	0.034	0.06	7.69	7.96
05/10/08	0.051	0.112	7.61	7.96
06/10/08	0.04	0.065	7.34	7.92
07/10/08	0.027	0.044	7.56	7.81
08/10/08	0.035	0.045	7.48	7.81
09/10/08	0.034	0.042	7.75	7.99
10/10/08	0.021	0.048	7.64	7.99
11/10/08	0.023	0.0301	7.37	7.91
12/10/08	0.026	0.045	7.34	7.89
01/10/09	0.032	0.06	7.72	7.95
02/10/09	0.025	0.051	7.68	8.15
03/10/09	0.028	0.051	7.67	8.05
04/10/09	0.041	0.057	7.51	8.04
05/10/09	0.037	0.056	7.32	7.86
06/10/09	0.036	0.054	7.48	7.77
07/10/09	0.037	0.044	7.19	7.7
08/10/09	0.04	0.046	7.3	7.73
09/10/09	0.0314	0.0432	7.36	7.71
10/10/09	0.026	0.039	7.31	7.7
11/10/09	0.029	0.033	7.26	7.75
12/10/09	0.055	0.164	7.14	7.56
01/10/10	0.065	0.86	7.1	7.5
02/10/10	0.041	0.067	7.28	7.83
03/10/10	0.0508	0.125	7.51	7.76
04/10/10	0.036	0.073	7.54	7.89
Average:	0.035	0.0818	7.489	7.906
90th Percentile:	0.0459	0.1045	7.71	8.045
10th Percentile:	0.0255	0.0405	7.23	7.705
MAX	0.065	0.86	7.8	8.53

* Effluent pH for MSTRANTI was calculated using this data.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Stony Creek WWTF Permit No.: VA 0062669

Receiving Stream: Stony Creek Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	24.2	mg/L	1Q10 (Annual) =	0.23	MGD	Annual - 1Q10 Mix =	100	%	Mean Hardness (as CaCO3) =	56	mg/L
90% Temperature (Annual) =	25	deg C	7Q10 (Annual) =	0.28	MGD	- 7Q10 Mix =	100	%	90% Temp (Annual) =	24.18	deg C
90% Temperature (Wet season) =	NA	deg C	30Q10 (Annual) =	0.72	MGD	- 30Q10 Mix =	100	%	90% Temp (Wet season) =	NA	deg C
90% Maximum pH =	7.1	SU	1Q10 (Wet season) =	15	MGD	Wet Season - 1Q10 Mix =	100	%	90% Maximum pH =	8.045	SU
10% Maximum pH =	6	SU	30Q10 (Wet season)	35	MGD	- 30Q10 Mix =	100	%	10% Maximum pH =	7.705	SU
Tier Designation (1 or 2) =	1		30Q5 =	1.5	MGD				Discharge Flow =	0.04	MGD
Public Water Supply (PWS) Y/N? =	n		Harmonic Mean =	NA	MGD						
Trout Present Y/N? =	n										
Early Life Stages Present Y/N? =	y										

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	9.9E+02	--	--	na	3.8E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.8E+04**
Acrolein	0	--	--	na	9.3E+00	--	--	na	3.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.6E+02**
Acrylonitrile C	0	--	--	na	2.5E+00	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Aldrin C	0	3.0E+00	--	na	5.0E-04	2.0E+01	--	na	#VALUE!	--	--	--	--	--	--	--	--	**2.0E+01**	**--**	**na**	**#VALUE!**
Ammonia-N (mg/l) (Yearly)	0	3.08E+01	2.86E+00	na	--	2.1E+02	5.4E+01	na	--	--	--	--	--	--	--	--	--	**2.1E+02**	**5.4E+01**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	3.28E+01	#VALUE!	na	--	1.2E+04	#######	na	--	--	--	--	--	--	--	--	--	**1.2E+04**	**#VALUE!**	**na**	**--**
Anthracene	0	--	--	na	4.0E+04	--	--	na	1.5E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+06**
Antimony	0	--	--	na	6.4E+02	--	--	na	2.5E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.5E+04**
Arsenic	0	3.4E+02	1.5E+02	na	--	2.3E+03	1.2E+03	na	--	--	--	--	--	--	--	--	--	**2.3E+03**	**1.2E+03**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Benzene C	0	--	--	na	5.1E+02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Benzidine C	0	--	--	na	2.0E-03	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Benzo (a) anthracene C	0	--	--	na	1.8E-01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Benzo (b) fluoranthene C	0	--	--	na	1.8E-01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Benzo (k) fluoranthene C	0	--	--	na	1.8E-01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Benzo (a) pyrene C	0	--	--	na	1.8E-01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Bis2-Chloroethyl Ether C	0	--	--	na	5.3E+00	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	2.5E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.5E+06**
Bis 2-Ethylhexyl Phthalate C	0	--	--	na	2.2E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Bromoform C	0	--	--	na	1.4E+03	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	7.3E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.3E+04**
Cadmium	0	9.7E-01	4.2E-01	na	--	6.5E+00	3.4E+00	na	--	--	--	--	--	--	--	--	--	**6.5E+00**	**3.4E+00**	**na**	**--**
Carbon Tetrachloride C	0	--	--	na	1.6E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Chlordane C	0	2.4E+00	4.3E-03	na	8.1E-03	1.6E+01	3.4E-02	na	#VALUE!	--	--	--	--	--	--	--	--	**1.6E+01**	**3.4E-02**	**na**	**#VALUE!**
Chloride	0	8.6E+05	2.3E+05	na	--	5.8E+06	1.8E+06	na	--	--	--	--	--	--	--	--	--	**5.8E+06**	**1.8E+06**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	1.3E+02	8.8E+01	na	--	--	--	--	--	--	--	--	--	**1.3E+02**	**8.8E+01**	**na**	**--**
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	6.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.2E+04**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Chloroform	0	--	--	na	1.1E+04	--	--	na	4.2E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.2E+05**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	6.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.2E+04**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	5.8E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.8E+03**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	5.6E-01	3.3E-01	na	--	--	--	--	--	--	--	--	--	**5.6E-01**	**3.3E-01**	**na**	**--**
Chromium III	0	2.1E+02	2.6E+01	na	--	1.4E+03	2.1E+02	na	--	--	--	--	--	--	--	--	--	**1.4E+03**	**2.1E+02**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.1E+02	8.8E+01	na	--	--	--	--	--	--	--	--	--	**1.1E+02**	**8.8E+01**	**na**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Copper	0	4.2E+00	3.0E+00	na	--	2.8E+01	2.4E+01	na	--	--	--	--	--	--	--	--	--	**2.8E+01**	**2.4E+01**	**na**	**--**
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	1.5E+02	4.2E+01	na	6.2E+05	--	--	--	--	--	--	--	--	**1.5E+02**	**4.2E+01**	**na**	**6.2E+05**
DDD [C]	0	--	--	na	3.1E-03	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
DDE [C]	0	--	--	na	2.2E-03	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	7.4E+00	8.0E-03	na	#VALUE!	--	--	--	--	--	--	--	--	**7.4E+00**	**8.0E-03**	**na**	**#VALUE!**
Demeton	0	--	1.0E-01	na	--	--	8.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**8.0E-01**	**na**	**--**
Diazinon	0	1.7E-01	1.7E-01	na	--	1.1E+00	1.4E+00	na	--	--	--	--	--	--	--	--	--	**1.1E+00**	**1.4E+00**	**na**	**--**
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	5.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.0E+04**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	3.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.7E+04**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	7.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.3E+03**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	2.7E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.7E+05**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	3.9E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.9E+05**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	1.6E+00	4.5E-01	na	#VALUE!	--	--	--	--	--	--	--	--	**1.6E+00**	**4.5E-01**	**na**	**#VALUE!**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	1.7E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+06**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	3.3E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+04**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	4.2E+07	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.2E+07**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+05**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+05**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	2.0E-06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E-06**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	1.5E+00	4.5E-01	na	3.4E+03	--	--	--	--	--	--	--	--	**1.5E+00**	**4.5E-01**	**na**	**3.4E+03**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	1.5E+00	4.5E-01	na	3.4E+03	--	--	--	--	--	--	--	--	**1.5E+00**	**4.5E-01**	**na**	**3.4E+03**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	1.5E+00	4.5E-01	--	--	--	--	--	--	--	--	--	--	**1.5E+00**	**4.5E-01**	**--**	**--**
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	3.4E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.4E+03**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	5.8E-01	2.9E-01	na	2.3E+00	--	--	--	--	--	--	--	--	**5.8E-01**	**2.9E-01**	**na**	**2.3E+00**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	1.2E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	8.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.1E+04**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	5.4E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.4E+03**
Fluorene	0	--	--	na	5.3E+03	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+05**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Guthion	0	--	1.0E-02	na	--	--	8.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**8.0E-02**	**na**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	3.5E+00	3.0E-02	na	#VALUE!	--	--	--	--	--	--	--	--	**3.5E+00**	**3.0E-02**	**na**	**#VALUE!**
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	3.5E+00	3.0E-02	na	#VALUE!	--	--	--	--	--	--	--	--	**3.5E+00**	**3.0E-02**	**na**	**#VALUE!**
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	6.4E+00	--	na	#VALUE!	--	--	--	--	--	--	--	--	**6.4E+00**	**--**	**na**	**#VALUE!**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	4.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.2E+04**
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	1.6E+01	na	--	--	--	--	--	--	--	--	--	**--**	**1.6E+01**	**na**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Lead	0	2.4E+01	2.7E+00	na	--	1.7E+02	2.2E+01	na	--	--	--	--	--	--	--	--	--	**1.7E+02**	**2.2E+01**	**na**	**--**
Malathion	0	--	1.0E-01	na	--	--	8.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**8.0E-01**	**na**	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Mercury	0	1.4E+00	7.7E-01	- -	- -	9.5E+00	6.2E+00	- -	- -	--	--	--	--	--	--	--	--	**9.5E+00**	**6.2E+00**	**- -**	**- -**
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	5.8E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.8E+04**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Methoxychlor	0	--	3.0E-02	na	--	--	2.4E-01	na	--	--	--	--	--	--	--	--	--	**--**	**2.4E-01**	**na**	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Nickel	0	6.4E+01	6.9E+00	na	4.6E+03	4.3E+02	5.6E+01	na	1.8E+05	--	--	--	--	--	--	--	--	**4.3E+02**	**5.6E+01**	**na**	**1.8E+05**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	2.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.7E+04**
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	1.9E+02	5.3E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+02**	**5.3E+01**	**na**	**--**
Parathion	0	6.5E-02	1.3E-02	na	--	4.4E-01	1.0E-01	na	--	--	--	--	--	--	--	--	--	**4.4E-01**	**1.0E-01**	**na**	**--**
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.1E-01	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**1.1E-01**	**na**	**#VALUE!**
Pentachlorophenol [C]	0	3.4E+00	2.6E+00	na	3.0E+01	2.3E+01	2.1E+01	na	#VALUE!	--	--	--	--	--	--	--	--	**2.3E+01**	**2.1E+01**	**na**	**#VALUE!**
Phenol	0	--	--	na	8.6E+05	--	--	na	3.3E+07	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+07**
Pyrene	0	--	--	na	4.0E+03	--	--	na	1.5E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+05**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+02**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	1.4E+02	4.0E+01	na	1.6E+05	--	--	--	--	--	--	--	--	**1.4E+02**	**4.0E+01**	**na**	**1.6E+05**
Silver	0	4.1E-01	--	na	--	2.8E+00	--	na	--	--	--	--	--	--	--	--	--	**2.8E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Thallium	0	--	--	na	4.7E-01	--	--	na	1.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+01**
Toluene	0	--	--	na	6.0E+03	--	--	na	2.3E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.3E+05**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	4.9E+00	1.6E-03	na	#VALUE!	--	--	--	--	--	--	--	--	**4.9E+00**	**1.6E-03**	**na**	**#VALUE!**
Tributyltin	0	4.6E-01	7.2E-02	na	--	3.1E+00	5.8E-01	na	--	--	--	--	--	--	--	--	--	**3.1E+00**	**5.8E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.7E+03**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	#VALUE!	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**#VALUE!**
Zinc	0	4.1E+01	4.0E+01	na	2.6E+04	2.8E+02	3.2E+02	na	1.0E+06	--	--	--	--	--	--	--	--	**2.8E+02**	**3.2E+02**	**na**	**1.0E+06**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	2.5E+04
Arsenic	7.2E+02
Barium	na
Cadmium	2.0E+00
Chromium III	1.3E+02
Chromium VI	4.3E+01
Copper	1.1E+01
Iron	na
Lead	1.3E+01
Manganese	na
Mercury	3.7E+00
Nickel	3.3E+01
Selenium	2.4E+01
Silver	1.1E+00
Zinc	1.1E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Stats.exe- Ammonia

9/16/2010 11:45:19 AM

Facility = Stony Creek WWTF
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 210
WLAc = 54
Q.L. = 0.2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

9.00 mg/L

Note: In accordance with GM 00-2011, 9.00mg/L is used to determine whether a limit is required.

Stats.exe- TRC

```
9/16/2010 11:46:26 AM

Facility  = Stony Creek WWTF
Chemical  = TRC
Chronic averaging period =  4
WLAa     =  130
WLAc     =  88
Q.L.       = 100
# samples/mo. = 30
# samples/wk. = 7

Summary of Statistics:

# observations = 1
Expected Value =  20000
Variance       =  1440000
C.V.           = 0.6
97th percentile daily values  =  48668.3
97th percentile 4 day average =  33275.8
97th percentile 30 day average=  24121.0
# < Q.L.       =  0
Model used     = BPJ Assumptions, type 2 data


A limit is needed based on Chronic Toxicity
Maximum Daily Limit   = 128.706580996684
Average Weekly limit  = 78.6020365710888
Average Monthly LImit = 63.7897054710064


The data are:


20000 ug/L
```

Note: In accordance with GM 00-2011, 20.0 mg/L is used to determine whether a limit is required.

Attachment G- Stream Sanitation Analysis (5/3/1986)

VIRGINIA WATER CONTROL BOARD

PIEDMONT REGIONAL OFFICE

MEMORANDUM

SUBJECT: Stony Creek, Sussex County, Discharge into Stony Creek, Chowan River Basin

TO: Tom Modena JDM 5-10-89

FROM: D.X. Ren

DATE: May 3, 1989

COPIES: Bob Ehrhart, File

On April 24, 1989 Stony Creek STP submitted a permit application which resulted in a stream analysis for a discharge flow of 0.04 MGD.

In reviewing the file of Stony Creek STP, it indicated the model was done on March 3, 1977 using the Monroe program. The modeling results are listed as follows:

Q = 0.10 MGD

BOD_5 = 30.0 mg/l

BOD_u/BOD_5 = 1.58

DO = 5.5 mg/l

(no TKN limit included)

Because the current flow (0.04 MGD) is much less than the modeled flow (0.1 MGD) there is no reason to remodel this discharge.

Please keep the current effluent limits except the new proposed flow.

I reran this model using the PC version verifying this.

If you have any questions, please let me know.

Attachment H-
Groundwater Evaluation and Approved Plan

Stony Creek WWTF
VA0062669
Groundwater Evaluation
June 24, 2010- JLH

Process and Background:

Stony Creek Wastewater Treatment Plant treats wastewater for the Town of Stony Creek, a population of 187 people. The present design flow is 0.04 MGD. The facility is located in the Coastal Plain Physiographic Province for which there are specific standards (9VAC25-280-50) and criteria (9VAC25-280-70). Virginia also has groundwater standards that are applicable statewide (9VAC25-280-40).

Stony Creek Wastewater Treatment facility consists of a two cell aerated lagoon followed by a disk filter then chlorination and dechlorination. Raw wastewater is introduced into the first cell via the influent pump station adjacent to Basin No. 1. Wastewater flows from Basin 1 into Basin No. 2 for further treatment. A baffled quiescent zone in Basin No. 2 allows for partial clarification of effluent prior to discharge to chlorination facilities. Treated effluent from Basin No. 2 passes into a cloth disk filter rated for 50,000 GPD. Excess effluent (>50,000 GPD) is bypassed and added to the filter effluent via manhole well. This filter effluent (or combined effluent) passes through the tablet type chlorinator into a contact tank. Chlorinated effluent is dechlorinated by a tablet type dechlorinator prior to discharge to cascade aeration steps.

Three monitoring wells were installed at the site. Monitoring Well 3 (MW-3) is the background well and Monitoring Wells 1 and 2 (MW-1 and MW-3) are the downgradient wells. The wells were installed to a depth of 20 feet. MW-3 is located 250 feet to the south of the facility. MW-1 and MW-2 are located 20 feet from the lagoon perimeter; MW-1 is north of the lagoons and MW-2 is located west of the lagoons. The monitoring wells are sampled annually and analyzed for chloride, TOC, ammonia, nitrate, specific conductivity, and pH.

Monitoring well data from 1994-2008 are used in this evaluation (Table 1 and 2); groundwater data from 1995 and 1999 are absent. The data were evaluated for normality using the DEQ Piedmont Regional Office, Groundwater Analysis Spreadsheet which employs the Kolmorogov-Smirnov Test of Normality to make the determination. Some parameter data sets for MW-1 and MW-2 were normally distributed, others were non-normal. The Non-Parametric test was used to evaluate the presence or absence of a statistically significant difference between the background concentrations and down gradient concentrations of each pollutant for non-normal data; Student's t-test was used to evaluate normally distributed data (Figures 1-12). Linear regression analysis (Table 3 and 4) was used to analyze whether there is a positive or negative trend present in particular parameters by means of a coefficient of determination (R^2).

pH:

For both downgradient wells, MW-1 and MW-2, a statistically significant difference in pH was identified for the lower pH range, but not the upper. Both data sets were not normally distributed. The Coastal Plain pH range standard is 6.5 s.u. to 9 s.u. The average pH for the background well, MW-3 was 6.2 s.u. Average pH at the downgradient wells was 5.7 s.u. (MW-2) and 5.9 s.u. (MW-1) and the pH for all three wells is below the lower bound of the standard for the Coastal Plain. The regression analysis for MW-1 shows a weak positive trend with a R^2 value of 0.2137, however the R^2 value for the MW-2 regression analysis was 0.006 implying that there is no trend present (Table 3 A/B). Given the weak positive trend at MW-1 and the lack of trend at MW-2 it

does not appear that the lagoons are actively decreasing the pH towards the acidic end of the spectrum.

Specific Conductivity:

Statistical analysis of MW-1 and MW-2 compared to MW-3 indicated a significant difference between specific conductivity at the downgradient wells and the background well. Specific conductivity data were not normally distributed and the Non-Parametric test was used. Regression analysis for MW-1 shows a weak positive trend (R^2= 0.1974) and a stronger positive trend for MW-2 with R^2= 0.5045 (Table 3 C/D). The average specific conductivity was 76.1 umho/cm at MW-3, 79.1 umho/cm at MW-1 and 97.7 umho/cm at MW-2. There are no groundwater standards or criteria for specific conductivity.

Nitrate:

No significant difference was found for the nitrate concentrations present at MW-1 as compared to background values (normally distributed data). A statistically significant difference was found at MW-2 (non-normal distribution). Regression analysis identified a weak negative trend in nitrate concentrations at MW-1 with a R^2 value of 0.2212, an indication of decreasing nitrate concentrations at this test location (Table 3 E/F). A positive trend was present at MW-2 with a R^2 value of 0.2526. The standard for nitrate is 5.0 mg/L in the Coastal Plain Physiographic Province. Average nitrate concentration at MW-3 was 0.20 mg/L, well below the standard. Average nitrate concentration at MW-1 and MW-2 was also 0.20 mg/L. Consequently, the lagoons are not causing a non-compliance issue with the nitrate groundwater standard.

Ammonia:

No significant difference was found in background ammonia concentrations and those at the down-gradient wells MW-1 (normally distributed data) and MW-2 (non-normal data). The average ammonia concentration at MW-3 was 0.16 mg/L and was 0.17 mg/L at MW-1 and MW-2. There was a positive trend in ammonia concentration at MW-1 and MW-2 with R^2 values of 0.7336 and 0.5613 respectively (Table 4 A/B). The groundwater standard for ammonia is 0.025 mg/L. All three wells, including the up-gradient well, have average ammonia concentrations in excess of the groundwater standard. Given the apparent contamination at the up-gradient well, and the absence of a significant difference in ammonia concentrations at the down-gradient wells as compared to the up-gradient well, it does not appear that the facility is contributing to ammonia concentrations in the groundwater.

Chloride:

Statistical analysis of the non-normal chloride data indicated a significant difference in downgradient concentrations at MW-1 and MW-2. Regression analysis revealed a weak positive trend (R^2= 0.0643) at MW-1 and a stronger positive trend at MW-2 (R^2= 0.6369) (Table 4 E/F). The average concentration at MW-1 was 8.8 mg/L, 9.4 mg/L at MW-2, and 4.2 mg/L at the background well, MW-3. However, the chloride standard for groundwater is 50.0 mg/L. These concentrations are well below the groundwater standard therefore the lagoons are not contributing to non-compliance with the standard.

Total organic carbon (TOC):

TOC data for MW-1 and MW-2 was non-normal. Statistical analysis indicated that no significant difference between TOC concentrations in the background well and downgradient wells MW-1 and MW-2. The TOC standard for groundwater in the Coastal Plain is 10.0 mg/L. The average concentration for MW-3, MW-2, and MW-1 was 2.8 mg/L, 1.9 mg/L, and 2.4 mg/L respectively. Note, the TOC concentration in MW-3 is higher than that in the downgradient wells and all concentrations are in compliance with the standard. Regression analysis indicated a negative trend in TOC concentration at MW-1 and MW-2 with R^2 values of 0.3746 and 0.3113 respectively (Table 4 C/D). Hence, it does not appear that the lagoons are contributing to enhanced TOC concentrations in the groundwater.

Conclusion:

A statistically significant difference between background concentrations and downgradient wells was observed for chloride, pH, and specific conductivity. Although a positive trend was present at MW-2 for chloride concentrations, the average concentrations present at both downgradient wells were less than 20% of the groundwater standard. Therefore the lagoons are not presently causing non-compliance with the groundwater standard for chloride. pH was statistically different only at the acid end of the range and was outside of the lower bound of the standard (6.5 s.u.). However, regression analysis indicated an overall lack of acidification (positive trend towards more acidic conditions) at MW-1 and MW-2 in the downgradient locations from 1994-2008. Ammonia concentrations in all three wells are in excess of the ammonia groundwater standard of 0.025 mg/L for the Coastal Plain Physiographic Province. There was no statistically significant difference in ammonia concentration at the down-gradient wells, and the average ammonia concentration at the up-gradient well is also in excess of the standard; therefore, the facility does not appear to be contributing to ammonia contamination in the groundwater. Continued monitoring of ammonia is required and future evaluation of the groundwater data will provide further assessment of ammonia in the groundwater for potential contamination issues. The average specific conductivity at MW-1 was only 3.00 umho/cm greater than that at MW-3 and the increased in specific conductivity is not likely associated with lagoon seepage as most parameters did not exhibit an increase in concentration at downgradient locations around the lagoons. There is no groundwater standard for specific conductivity and this parameter can be affected by natural constituents in the soil. Overall the linear regression analysis points to MW-2, west of the lagoon, as the more impacted location with a greater occurrence of positive trends with R^2 values nearer to one (1) as compared to MW-1 north of the lagoons.

Recommendation:

Continued annual groundwater monitoring and reporting is advised for all parameters in MW-1, MW-2, and MW-3. A reassessment of the trend towards a more acidic pH concentration and greater chloride concentrations in downgradient wells at permit reissuance is recommended.

Table 1. Stony Creek Wastewater Tre atment Farm Groundwater Monitoring Data VPDEs Permit No. VA0062669

MW-1

Date	Depth to Water (ft)	pH (s.u.)	Specific Conductance (umho/cm)	Nitrate (mg/L)	Ammonia (mg/L)	TOC (mg/L)	Chloride (mg/L)
12/14/1994	8.86	5.4	93	0.2		10.4	10.7
7/31/1996	4	5.6	68	**0.1**		2.3	8
10/20/1997	6.06	5.27	60	0.23		2.1	7
8/10/1998	5.86	6.09	68	0.42	**0.1**	1.1	8
9/25/2000	3.62	6.21	67	0.23	0.14	3	9
8/27/2001	4.77	6.22	74	0.22	0.14	3.4	8
8/15/2002	6.63	6.25	84	0.22	**0.1**	1.6	9
7/22/2003	4.38	6.24	75	0.33	**0.2**	1.1	8
8/10/2004	3.78	6.21	77	0.11	**0.2**	1.4	9
8/22/2005	7.47	6.14	88	**0.1**	**0.2**	0.5	10
8/15/2006	5.18	6.19	109	**0.1**	**0.2**	1.85	8
8/23/2007	6.02	5.72	80	0.07	**0.2**	1.16	8
9/22/2008	5.92	5.79	85	**0.1**	**0.2**	1.05	12
Average	5.58	5.95	79.08	0.19	0.17	2.38	8.82
Maximum	8.86	6.25	109	0.42	0.2	10.4	12

MW-2

Date	Depth to Water (ft)	pH (s.u.)	Specific Conductance (umho/cm)	Nitrate (mg/L)	Ammonia (mg/L)	TOC (mg/L)	Chloride (mg/L)
12/14/1994	8.86	5.8	100	0.3		9.6	2.4
7/31/1996	7	5.3	87	0.25		1.6	9
10/20/1997	8.71	5.5	87	0.15		0.79	9
8/10/1998	7.97	5.72	89	0.28	**0.1**	1.5	7
9/25/2000	5.91	5.97	80	0.16	0.18	3.3	6
8/27/2001	7.17	6.01	84	0.16	0.15	1	8
8/15/2002	7.74	6.05	97	0.18	**0.1**	0.88	11
7/22/2003	6.17	6.04	99	0.16	**0.2**	0.79	11
8/10/2004	5.66	6.05	105	0.29	**0.2**	1.4	10
8/22/2005	7.95	6.07	99	**0.1**	**0.2**	**0.5**	11
8/15/2006	7.13	5.78	118	0.8	**0.2**	1.24	9
8/23/2007	8.43	5.15	111	0.37	**0.2**	1.2	13
9/22/2008	8.67	5.21	114	0.76	**0.2**	0.86	16
Average	7.49	5.74	97.69	0.30	0.17	1.90	9.42
Maximum	8.86	6.07	118	0.8	0.2	9.6	16

MW-3

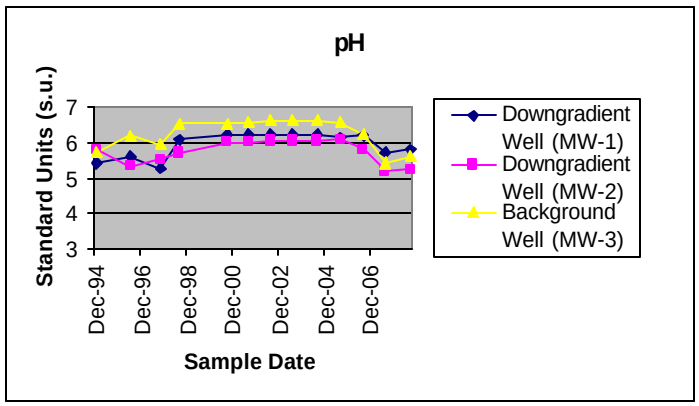
Date	Depth to Water (ft)	pH (s.u.)	Specific Conductance (umho/cm)	Nitrate (mg/L)	Ammonia (mg/L)	TOC (mg/L)	Chloride (mg/L)
12/14/1994	4.76	5.7	98	**0.1**		25.2	10.2
7/31/1996	7.5	6.2	90	0.15		2	3
10/20/1997	9.64	5.96	81	0.1		0.6	4
8/10/1998	9.17	6.5	83	0.21	**0.1**	0.7	3
9/25/2000	6.85	6.53	66	0.14	**0.1**	2.5	2
8/27/2001	8.43	6.59	68	0.17	0.13	1.2	2
8/15/2002	9.9	6.6	63	0.38	**0.1**	0.86	2
7/22/2003	7.1	6.63	66	0.44	**0.2**	0.74	3
8/10/2004	8.61	6.62	85	0.1	**0.2**	1.1	4
8/22/2005	9.02	6.55	88	**0.1**	**0.2**	**0.5**	4
8/15/2006	8.21	6.22	60	0.21	**0.2**	0.38	3
8/23/2007	9.56	5.43	70	0.44	**0.2**	0.45	4
9/22/2008	9.63	5.58	71	**0.1**	**0.2**	0.48	10
Average	8.34	6.24	76.08	0.20	0.16	2.82	4.17
Maximum	9.9	6.63	98	0.44	0.2	25.2	10.2

Note:

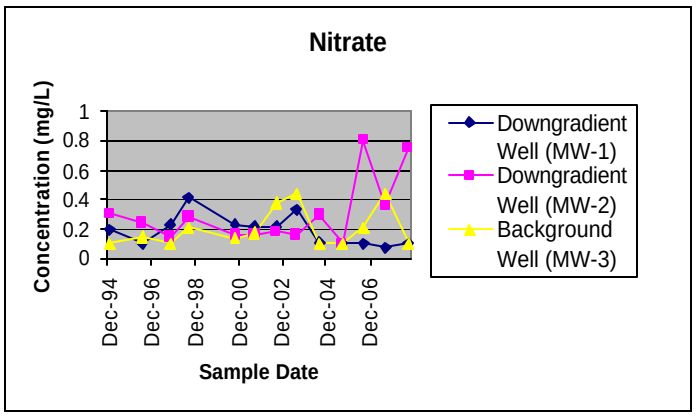
The data shown in red are quantification levels (QLs) for the test method. The reported value was "<QL."
MW-1 is located 20 feet north of the lagoons.
MW-2 is located 20 feet west of the lagoons.
MW-3 is located 250 feet south of the lagoons.

Table 2. (A-F) Pollutant Time Series for Background and Downgradient Wells.

A



B



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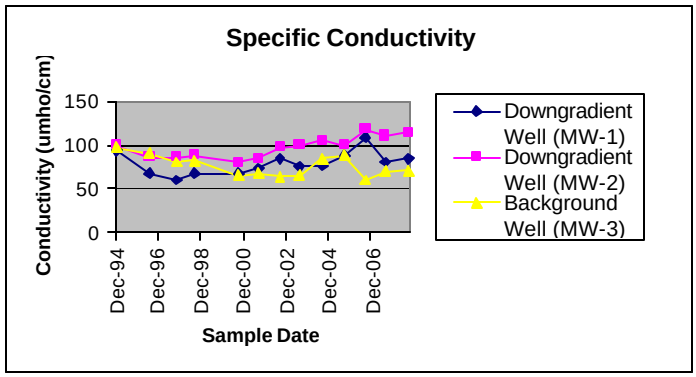

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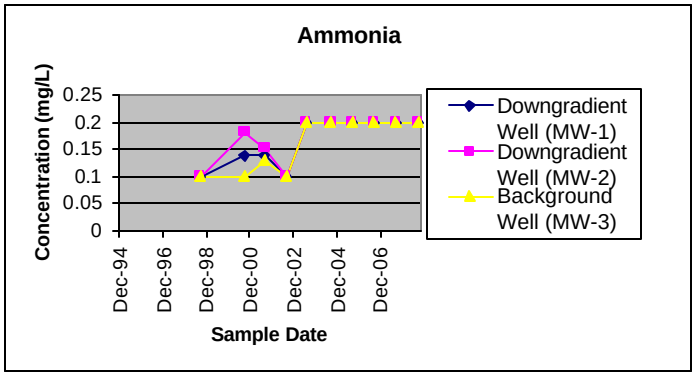

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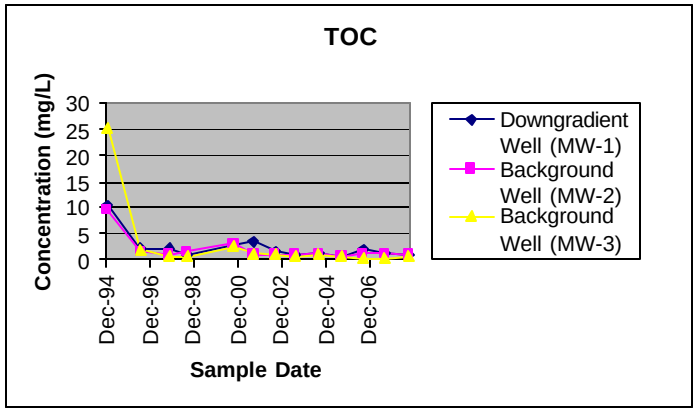
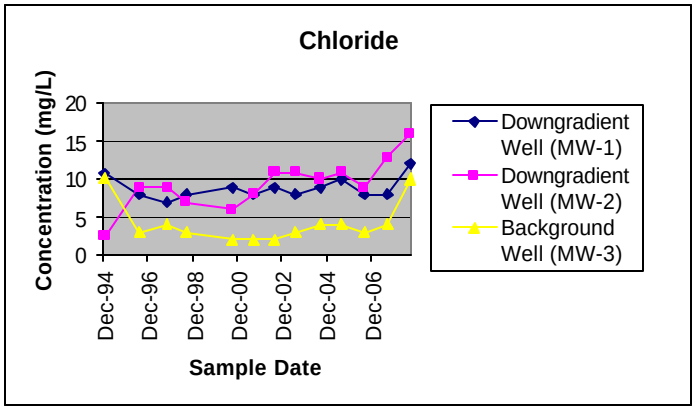


F



Groundwater Data Analysis for Non-normal Data

Parameter	pH
Up Gradient Data	**Down Gradient Data**
5.7	5.4
6.2	5.6
5.96	5.27
6.5	6.09
6.53	6.21
6.59	6.22
6.6	6.25
6.63	6.24
6.62	6.21
6.55	6.14
6.22	6.19
5.43	5.72
5.58	5.79
Minimum 5.43	**Minimum** 5.27
Maximum 6.63	**Maximum** 6.25
Is there a significant difference?	
Lower Range	**Upper Range**
YES	**No**

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	pH
Monitoring Well #:	1

Figure 1. MW-1 pH Statistical Test of Significance

Groundwater Data Analysis for Non-normal Data

Parameter	pH
Up Gradient Data	**Down Gradient Data**
5.7	5.8
6.2	5.3
5.96	5.5
6.5	5.72
6.53	5.97
6.59	6.01
6.6	6.05
6.63	6.04
6.62	6.05
6.55	6.07
6.22	5.78
5.43	5.15
5.58	5.21
Minimum 5.43	**Minimum** 5.15
Maximum 6.63	**Maximum** 6.07
Is there a significant difference?	
Lower Range	**Upper Range**
YES	**No**

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	pH
Monitoring Well #:	2

Figure 2. MW-2 pH Statistical Test of Significance

Groundwater Data Analysis for Non-normal Data

Parameter	ecific Conduct
Up Gradient Data	**Down Gradient Data**
98	93
90	68
81	60
83	68
66	67
68	74
63	84
66	75
85	77
88	88
60	109
70	80
71	85
Minimum 60	**Minimum** 60
Maximum 98	**Maximum** 109
Is there a significant difference?	
YES	

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	Specific Conductivity
Monitoring Well #:	1

Figure 3. MW-1 Specific Conductivity Test of Significance

Groundwater Data Analysis for Non-normal Data

Parameter	ecific Conduct
Up Gradient Data	**Down Gradient Data**
98	100
90	87
81	87
83	89
66	80
68	84
63	97
66	99
85	105
88	99
60	118
70	111
71	114
Minimum 60	**Minimum** 80
Maximum 98	**Maximum** 118
Is there a significant difference?	
YES	

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	Specific Conductivity
Monitoring Well #:	2

Figure 4. MW-2 Specific Conductivity Test of Significance

Cochran's Approximation to the Behrens-Fisher Student's t-Test (at a 5% Level of Significance)

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	Nitrate
Monitoring Well #:	1
What is the number of observations in the set of background data (n_b)?	13
What is the number of observations in the set of monitoring data (n_m)?	13

	Background	Monitored Site	$[X_b-X_b(ave)]^2$	$[X_m-X_m(ave)]^2$
1	0.1	0.2	0.011	0.000
2	0.15	0.1	0.003	0.008
3	0.1	0.23	0.011	0.002
4	0.21	0.42	0.000	0.054
5	0.14	0.23	0.004	0.002
6	0.17	0.22	0.001	0.001
7	0.38	0.22	0.031	0.001
8	0.44	0.33	0.056	0.020
9	0.1	0.11	0.011	0.006
10	0.1	0.1	0.011	0.008
11	0.21	0.1	0.000	0.008
12	0.44	0.07	0.056	0.014
13	0.1	0.1	0.011	0.008
14	0	0	0.000	0.000
15	0	0	0.000	0.000
16	0	0	0.000	0.000
17	0	0	0.000	0.000
18	0	0	0.000	0.000
19	0	0	0.000	0.000
20	0	0	0.000	0.000
21	0	0	0.000	0.000
22	0	0	0.000	0.000
23	0	0	0.000	0.000
24	0	0	0.000	0.000
25	0	0	0.000	0.000
26	0	0	0.000	0.000
27	0	0	0.000	0.000
28	0	0	0.000	0.000
29	0	0	0.000	0.000
30	0	0	0.000	0.000
31	0	0	0.000	0.000
32	0	0	0.000	0.000
33	0	0	0.000	0.000
34	0	0	0.000	0.000
35	0	0	0.000	0.000
36	0	0	0.000	0.000
37	0	0	0.000	0.000
38	0	0	0.000	0.000
39	0	0	0.000	0.000
40	0	0	0.000	0.000

$X_b(ave)$ = 0.203 $X_m(ave)$ = 0.187

T_b = 1.782 (from lookup table)

T_m = 1.782

s_b^2 = 0.017 = $[(X_{b1}-X_b(ave))^2+(X_{b2}-X_b(ave))^2 ...(X_{bn}-X_b(ave))^2]/(n_b-1)$

Figure 5. MW-1 Nitrate Test of Significance

Groundwater Data Analysis for Non-normal Data

Parameter	Nitrate
Up Gradient Data	**Down Gradient Data**
0.1	0.3
0.15	0.25
0.1	0.15
0.21	0.28
0.14	0.16
0.17	0.16
0.38	0.18
0.44	0.16
0.1	0.29
0.1	0.1
0.21	0.8
0.44	0.37
0.1	0.76
Minimum 0.1	**Minimum** 0.1
Maximum 0.44	**Maximum** 0.8
Is there a significant difference?	
YES	

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	Nitrate
Monitoring Well #:	2

Figure 6. MW-2 Nitrate Test of Significance

Cochran's Approximation to the Behrens-Fisher Student's t-Test (at a 5% Level of Significance)

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	Ammonia
Monitoring Well #:	1
What is the number of observations in the set of background data (n_b)?	10
What is the number of observations in the set of monitoring data (n_m)?	10

	Background	Monitored Site	$[X_b-X_b(ave)]^2$	$[X_m-X_m(ave)]^2$
1	0.1	0.1	0.004	0.005
2	0.1	0.14	0.004	0.001
3	0.13	0.14	0.001	0.001
4	0.1	0.1	0.004	0.005
5	0.2	0.2	0.001	0.001
6	0.2	0.2	0.001	0.001
7	0.2	0.2	0.001	0.001
8	0.2	0.2	0.001	0.001
9	0.2	0.2	0.001	0.001
10	0.2	0.2	0.001	0.001
11	0	0	0.000	0.000
12	0	0	0.000	0.000
13	0	0	0.000	0.000
14	0	0	0.000	0.000
15	0	0	0.000	0.000
16	0	0	0.000	0.000
17	0	0	0.000	0.000
18	0	0	0.000	0.000
19	0	0	0.000	0.000
20	0	0	0.000	0.000
21	0	0	0.000	0.000
22	0	0	0.000	0.000
23	0	0	0.000	0.000
24	0	0	0.000	0.000
25	0	0	0.000	0.000
26	0	0	0.000	0.000
27	0	0	0.000	0.000
28	0	0	0.000	0.000
29	0	0	0.000	0.000
30	0	0	0.000	0.000
31	0	0	0.000	0.000
32	0	0	0.000	0.000
33	0	0	0.000	0.000
34	0	0	0.000	0.000
35	0	0	0.000	0.000
36	0	0	0.000	0.000
37	0	0	0.000	0.000
38	0	0	0.000	0.000
39	0	0	0.000	0.000
40	0	0	0.000	0.000

$X_b(ave)$ = 0.163 $X_m(ave)$ = 0.168

T_b = 1.833 (from lookup table)

T_m = 1.833

s_b^2 = 0.002 = $[(X_{b1}-X_b(ave))^2+(X_{b2}-X_b(ave))^2 ...(X_{bn}-X_b(ave))^2]/(n_b-1)$

Figure 7. MW-1 Ammonia Test of Significance

Groundwater Data Analysis for Non-normal Data

Parameter	Ammonia
Up Gradient Data	**Down Gradient Data**
0.1	0.1
0.1	0.18
0.13	0.15
0.1	0.1
0.2	0.2
0.2	0.2
0.2	0.2
0.2	0.2
0.2	0.2
0.2	0.2
Minimum 0.1	**Minimum** 0.1
Maximum 0.2	**Maximum** 0.2
Is there a significant difference?	
NO	

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	Ammonia
Monitoring Well #:	2

Figure 8. MW-2 Ammonia Test of Significance

Groundwater Data Analysis for Non-normal Data

Parameter	Chloride
Up Gradient Data	**Down Gradient Data**
10.2	10.7
3	8
4	7
3	8
2	9
2	8
2	9
3	8
4	9
4	10
3	8
4	8
10	12
Minimum 2	**Minimum** 7
Maximum 10.2	**Maximum** 12
Is there a significant difference?	
YES	

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	Chloride
Monitoring Well #:	1

Figure 9. MW-1 Chloride Test of Significance

Groundwater Data Analysis for Non-normal Data

Parameter	Chloride
Up Gradient Data	**Down Gradient Data**
10.2	10.7
3	8
4	7
3	8
2	9
2	8
2	9
3	8
4	9
4	10
3	8
4	8
10	12
Minimum 2	**Minimum** 7
Maximum 10.2	**Maximum** 12
Is there a significant difference?	
YES	

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	Chloride
Monitoring Well #:	2

Figure 10. MW-2 Chloride Test of Significance

Groundwater Data Analysis for Non-normal Data

Parameter	TOC
Up Gradient Data	**Down Gradient Data**
25.2	10.4
2	2.3
0.6	2.1
0.7	1.1
2.5	3
1.2	3.4
0.86	1.6
0.74	1.1
1.1	1.4
0.5	0.5
0.38	1.85
0.45	1.16
0.48	1.05
Minimum 0.38	**Minimum** 0.5
Maximum 25.2	**Maximum** 10.4
Is there a significant difference?	
NO	

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	TOC
Monitoring Well #:	1

Figure 11. MW-1 TOC Test of Significance

Groundwater Data Analysis for Non-normal Data

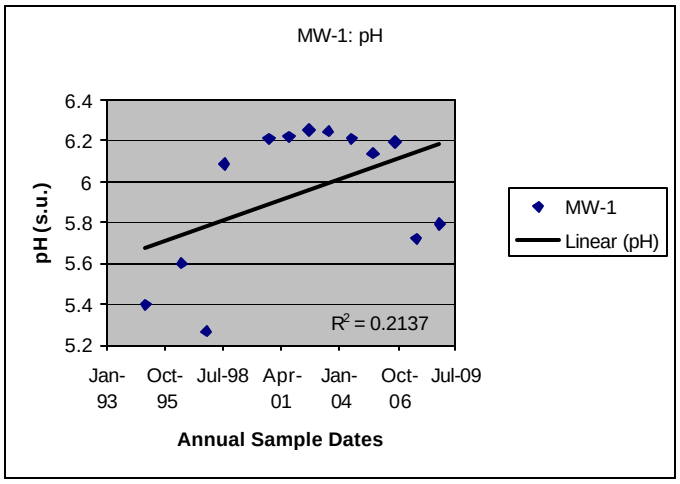
Parameter	TOC
Up Gradient Data	**Down Gradient Data**
25.2	9.6
2	1.6
0.6	0.79
0.7	1.5
2.5	3.3
1.2	1
0.86	0.88
0.74	0.79
1.1	1.4
0.5	0.5
0.38	1.24
0.45	1.2
0.48	0.86
Minimum 0.38	**Minimum** 0.5
Maximum 25.2	**Maximum** 9.6
Is there a significant difference?	
NO	

Permit Number	VA0062669
Facility Name	Stony Creek WWTF
Parameter	TOC
Monitoring Well #:	2

Figure 12. MW-2 TOC Test of Significance

Table 3. (A-F) Linear Regression Analysis for pH, Specific Conductivity and Nitrate

A



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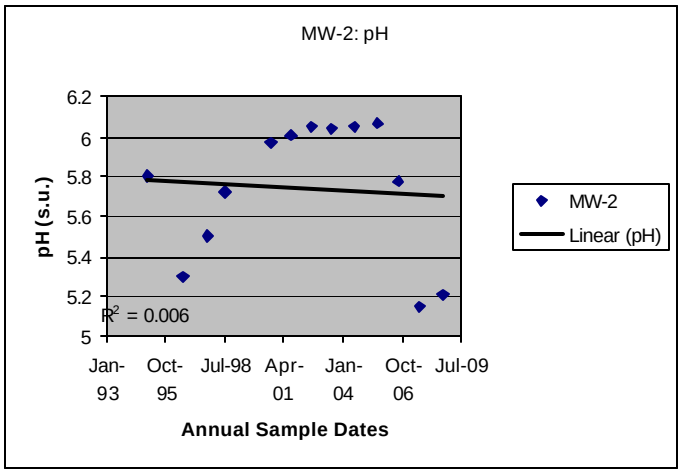

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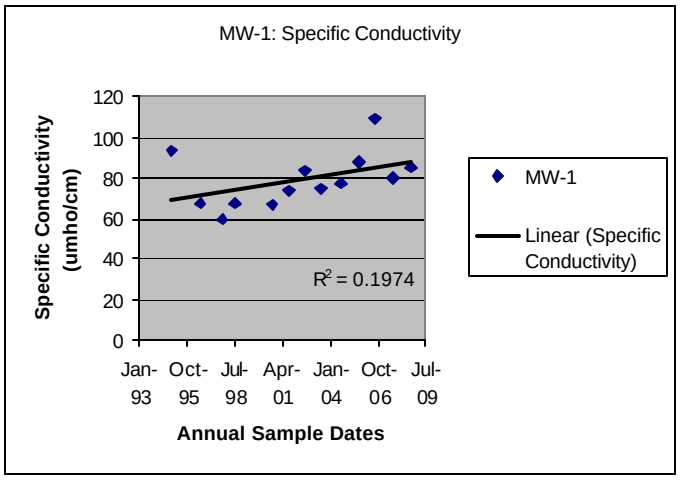
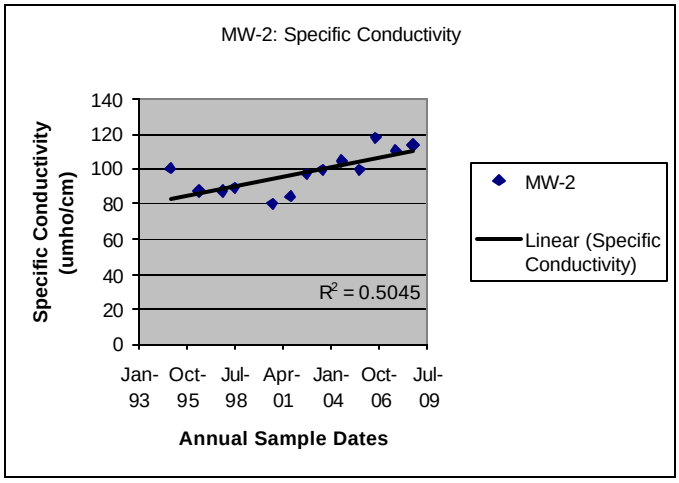
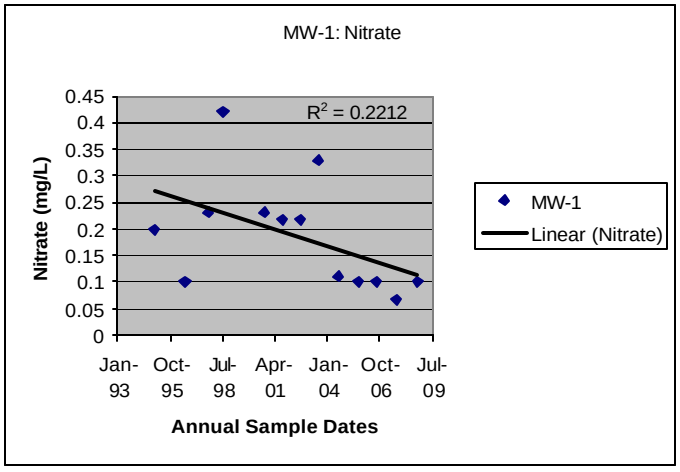


D



E



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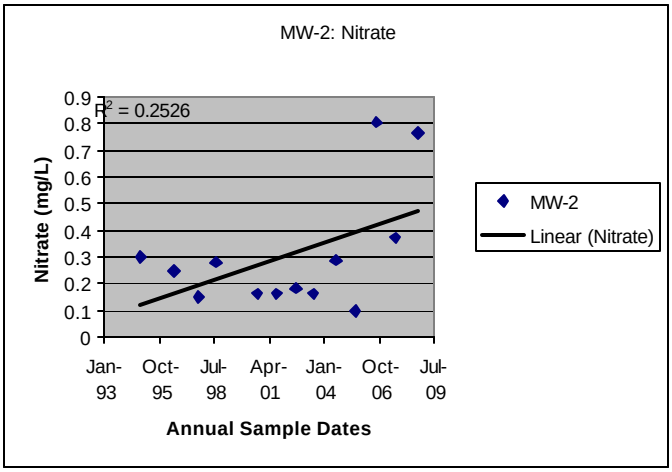
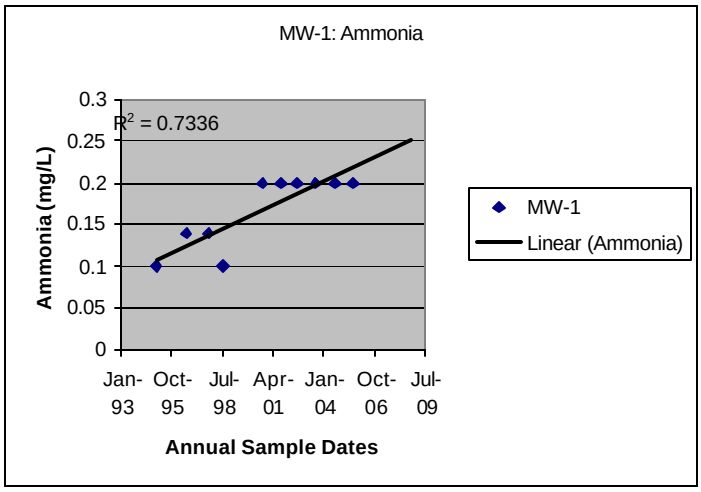
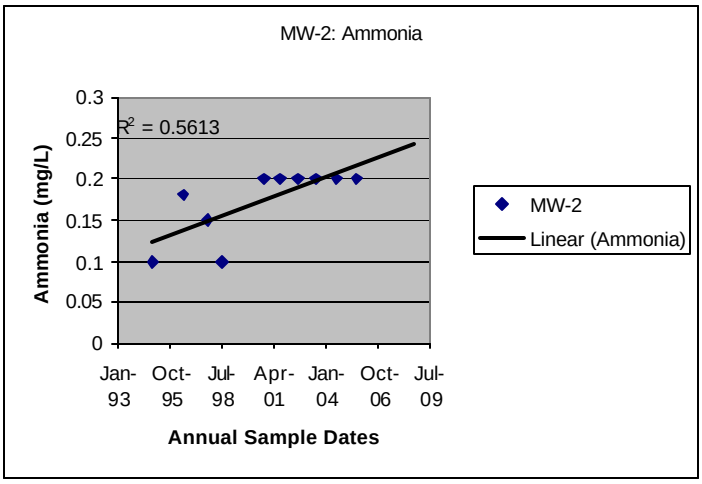


Table 4. (A-F) Linear Regression Analysis for Ammonia, TOC, and Chloride.

A



B



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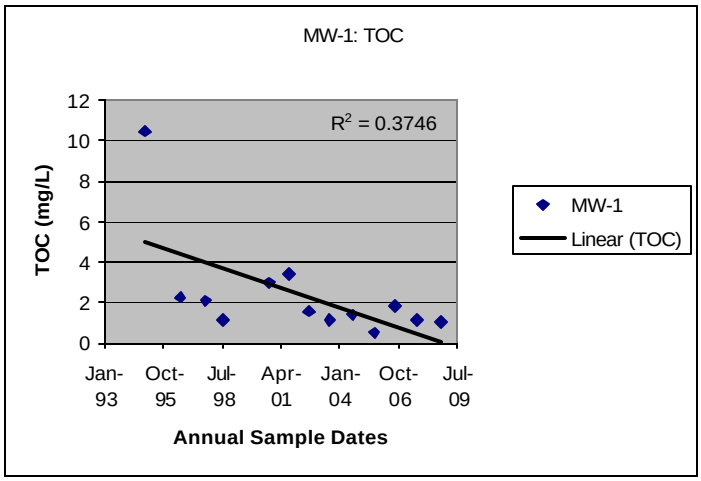

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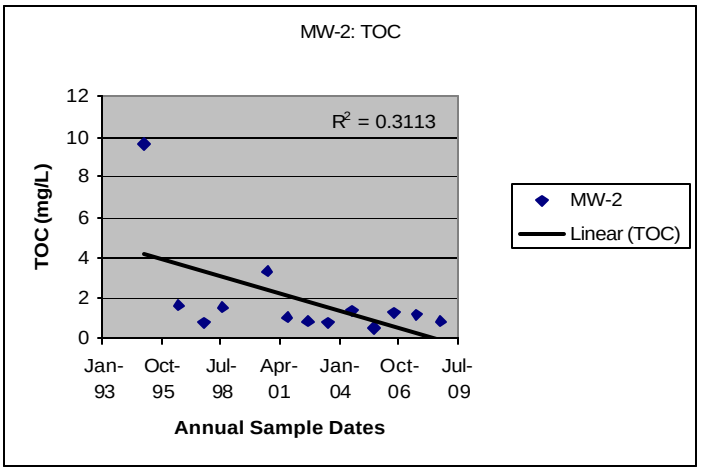

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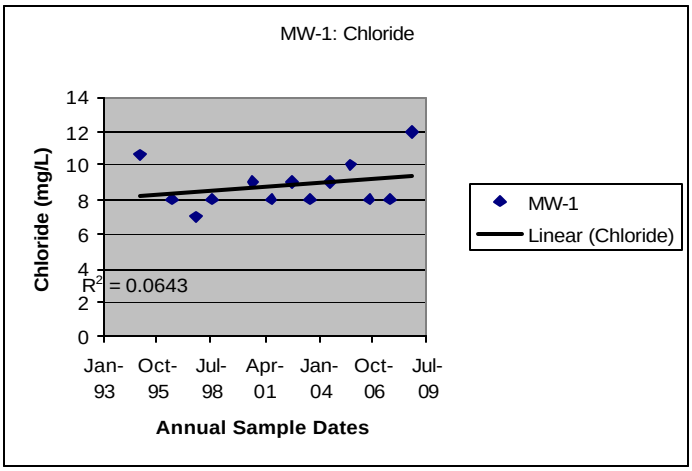

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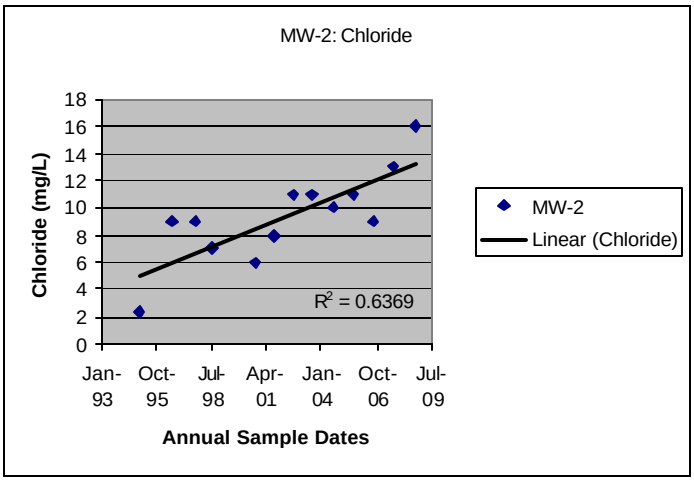

COMMONWEALTH of VIRGINIA

STATE WATER CONTROL BOARD

2111 Hamilton Street

Richard N. Burton
Executive Director

Post Office Box 11143
Richmond, Virginia 23230-1143
(804) 367-0056
TDD (804) 367-9763

Please reply to: Piedmont Regional Office
2201 West Broad Street
Richmond, Virginia 23220
(804) 367-1006

APR 12 1990

The Honorable Howard Wachsman
Mayor, Town of Stony Creek
P. O. Box 65
Stony Creek, VA 23883

RE: Ground Water Monitoring Plan for Sewerage Lagoon
VPDES No. VA0062669

Dear Mayor Wachsman:

The referenced plan, submitted with a revision date of February 19, 1990, has been reviewed by our staff and found to be technically adequate with the condition that a bentonite pellet seal be provided between slurry and filter (sand) pack.

With this conditional approval, your facility should proceed with installation of the monitoring wells and perform the initial sampling.

Please use a copy of the attached, reporting form A, beginning with the third quarter of 1990. This form, one for each well, along with well borings and as-built specifications should be submitted by September 10th.

Should you have any questions, please feel free to contact our office.

Sincerely,

Gerard Seeley, Jr.
Regional Director

/rwe

cc: Ralph Mayer, OE & CA
Gus Anderson, B & B consultants
Ralph Sweeney, VDH-DRO

ATTACHMENT A

State Water Control Board
Ground Water Monitoring Report

Stony Creek Wastewater Lagoon (VA0062669)
Ground Water Monitoring Well No. _____

Parameter	Units	Sample Type	YEAR:_____			
			Feb.	May	Aug.	Nov.
Elevation	Ft.	Meas.				
pH	S.U.	Grab				
Specific Conductance	umhos/cm	Grab				
Nitrate Nitrogen (NO_3)	mg/l	Grab				
Total Organic Carbon (TOC)	mg/l	Grab				
Chlorides	mg/l	Grab				
Fecal Coliform	N/100 ml	Grab				
Total Phosphorus	mg/l	Grab				

I certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete and accurate.

_____
Signature of Authorized Agent

_____
Name of Authorized Agent, Title

_____
Date

5. Ground Water Monitoring

a. Within 60 days of the permit effective date, the permittee shall submit plans for a ground water monitoring network around the treatment facility which, when approved by the staff, will be incorporated as an enforceable part of this permit.

Ground water monitoring will begin in the first quarter after approval of the groundwater monitoring network by the Board's staff. Samples shall be taken during the months of February, May, August, and November. Sampling results shall be reported to the Board's Piedmont Regional Office and the Virginia Department of Health's Southeast Virginia Regional Office along with the Discharge Monitoring Report by the 10th day of the following month. Ground water shall be monitored as follows:

PARAMETER	MONITORING REQUIREMENT Frequency	Sample Type
Ground Water Elevation	1/quarter	Measure
pH	1/quarter	Grab
Specific Conductance	1/quarter	Grab
Nitrate Nitrogen (NO_3)	1/quarter	Grab
Total Organic Carbon (TOC)	1/quarter	Grab
Chlorides	1/quarter	Grab
Fecal Coliform	1/quarter	Grab
Total Phosphorus	1/quarter	Grab

Following one year of monitoring, the above parameters and frequency of analysis may be adjusted, as appropriate, by the Board's staff.

b. If the Board's staff determines that seepage from the treatment facility is having an adverse impact on ground water quality or does not maintain ground water quality standards, then the permittee shall submit a plan of action for the mitigation and remediation of the ground water problem. The plan shall be submitted within 60 days of notification by the Board's staff and may require an upgrade of the existing treatment facility.

Attatchment I- EPA Checklist

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Stony Creek WWTF

NPDES Permit Number: VA0062669

Permit Writer Name: Janine Howard

Date: 21 September 2010

Major [ ] **Minor** [X] **Industrial** [ ] **Municipal** [X]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	**X**		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	**X**		
3. Copy of Public Notice?		**X**	
4. Complete Fact Sheet?	**X**		
5. A Priority Pollutant Screening to determine parameters of concern?		**X**	
6. A Reasonable Potential analysis showing calculated WQBELs?	**X**		
7. Dissolved Oxygen calculations?		**X**	
8. Whole Effluent Toxicity Test summary and analysis?			**X**
9. Permit Rating Sheet for new or modified industrial facilities?			**X**

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		**X**	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	**X**		
3. Does the **fact sheet** or permit contain a description of the wastewater treatment process?	**X**		

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		**X**	
5. Has there been any change in streamflow characteristics since the last permit was developed?		**X**	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		**X**	
7. Does the **fact sheet** or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	**X**		
8. Does the facility discharge to a 303(d) listed water?		**X**	
a. Has a TMDL been developed and approved by EPA for the impaired water?			**X**
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?		X	
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water? (pH, fecal coliform)		X	
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		**X**	
10. Does the permit authorize discharges of storm water?		**X**	
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production? (expansion is proposed)		**X**	
12. Are there any production-based, technology-based effluent limits in the permit?		**X**	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		**X**	
14. Are any WQBELs based on an interpretation of narrative criteria?		**X**	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		**X**	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		**X**	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated? (VDH does this)	**X**		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		**X**	
20. Have previous permit, application, and fact sheets been examined?	**X**		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs

(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous VPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL			x

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
3. Does the fact sheet provide effluent characteristics for each outfall?	x		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	x		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	x		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	x		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	x		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?		x	
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	x		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	x		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	x		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	x		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	x		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	x		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, and does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	x		
3. Does the permit require at least annual influent monitoring for BOD and TSS to assess compliance with applicable percent removal requirements?		x	
4. Does the permit require testing for Whole Effluent Toxicity?		x	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	x		
2. Does the permit include appropriate storm water program requirements?			x

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			x
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	x		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		x	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		x	
a. Does the permit require implementation of the "Nine Minimum Controls"?			x
b. Does the permit require development and implementation of a "Long Term Control Plan"?			x
c. Does the permit require monitoring and reporting for CSO events?			x
7. Does the permit include appropriate Pretreatment Program requirements?	x		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	x		

List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
	Monitoring and records	Transfers
Duty to mitigate	Signatory requirement	Monitoring reports
Proper O & M	Bypass	Compliance schedules
Permit actions	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?			x

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Janine L. Howard
Title	Environmental Specialist II
Signature	
Date	21 September 2010

Attachment J- Threatened and Endangered Species Coordination and Reports

Virginia Department of Game and Inland Fisheries

11/12/2010 10:34:30 AM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 11/12/2010, 10:34:30 AM

Help

Known or likely to occur within a **2 mile radius of null**
(at 36,56,55.9 77,23,24.0)
in **183 Sussex County, VA**

Anadromous Fish Use Streams (1 records)

View Map of All Anadromous Fish Use Streams

Stream ID	Stream Name	Reach Status	Anadromous Fish Species			View Map
			Different Species	Highest TE*	Highest Tier**	
C55	Nottoway River	Confirmed	4		IV	Yes

* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; SC=State Candidate; CC=Collection Concern; SS=State Special Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Impediments to Fish Passage

N/A

Threatened and Endangered Waters (2 Reaches)

View Map of All Threatened and Endangered Waters

Stream Name	T&E Waters Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Nottoway River (03010201)	FESE	010214	FESE	I	Logperch, Roanoke	Percina rex	Yes
		060003	FESE	II	Wedgemussel, dwarf	Alasmidonta heterodon	
		060173	FSST	II	Pigtoe, Atlantic	Fusconaia masoni	
Stony Creek (03010201)	FESE	010214	FESE	I	Logperch, Roanoke	Percina rex	Yes

060173	FSST	II	Pigtoe, Atlantic	Fusconaia masoni	

Cold Water Stream Survey (Trout Streams)
Managed Trout Species

N/A

Scientific Collections (57 - displaying first 22 , 22 Collections with Threatened or Endangered species)

View Map of All Query Results Scientific Collections

Collection	Date Collected	Collector	Collection Species			View Map
			Different Species	Highest TE*	Highest Tier**	
318674	Aug 20 2007	Ricky Davis	1	FESE	I	Yes
64346	Aug 1 2000	PAUL L. ANGERMEIER (PRINCIPLE PERMITTEE), VARIOUS COLLECTORS	14	FESE	I	Yes
58012	Aug 4 1998	PAUL ANGERMEIER (PRINCIPLE PERMITTEE) AND AMANDA ROSENBERGER, VIRGINIA POLYTECHNICAL INSTITUTE	14	FESE	I	Yes
58011	Aug 3 1998	PAUL ANGERMEIER (PRINCIPLE PERMITTEE) AND AMANDA ROSENBERGER, VIRGINIA POLYTECHNICAL INSTITUTE	13	FESE	I	Yes
55745	Jul 11 1996	NEVES, DOROSHEFF, VAUGHAN, JONES, YANG, VIRGINIA COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT	5	FESE	II	Yes
62912	Jul 11 1996	Neves, Vaughan, Dorosheff, Jones, Yang	5	FESE	II	Yes
50401	Jun 19 1996	P.L. Angermeier, VPI&SU	19	FESE	I	Yes
6565	Oct 13 1994	Greg Garman, VCU	2	FESE	I	Yes
8642	Oct 13 1994	GREG GARMAN,VCU	2	FESE	I	Yes
10348	May 14 1982	Norman	25	FESE	I	Yes
36483	Jan 1 1982	MDN-B-NORMAN	25	FESE	I	Yes
15418	Oct 2 1970	MILLSAPS	15	FESE	I	Yes

10414	Oct 26 1966	Woolcott	19	FESE	I	Yes
54583	Sep 26 1996	DR. GREG GARMAN, VIRGINIA COMMONWEALTH UNIVERSITY	20	SS	II	Yes
8271	May 1 1990	RICK EADES	1	SS	II	Yes
11179	Aug 17 1986	SIMONSON	7	SS	II	Yes
15408	Jun 17 1973	R.D. ROSS	17	SS	II	Yes
33678	Jan 1 1973	VPI-B-VA. POLY. INST.	17	SS	II	Yes
15422	Jun 26 1968	WOOLCOTT	14	SS	I	Yes
15421	Apr 25 1968	WOOLCOTT	13	SS	I	Yes
10395	Sep 30 1967	Zorach	21	SS	I	Yes
15419	Sep 29 1967	WOOLCOTT	13	SS	I	Yes

Displayed 22 collections

Selected 57 Collections View all 57 Collections

audit no. 315683 11/12/2010 10:34:30 AM Virginia Fish and Wildlife Information Service

Howard, Janine (DEQ)

From: Aschenbach, Ernie (DGIF)
Sent: Thursday, February 17, 2011 4:10 PM
To: Howard, Janine (DEQ); Daub, Elleanore (DEQ); Cindy Kane (cindy_kane@fws.gov); Watson, Brian (DGIF)
Cc: ProjectReview (DGIF)
Subject: ESSLog# 31423; VPDES permit re-issuance 0062669, Stony Creek WWTP in Sussex County, Virginia

We have reviewed the VPDES re-issuance for the above-referenced facility. According to DEQ, the proposed upgrades will not result in an increase in the design flow of the facility. The receiving stream is Stony Creek, a headwater tributary to the Nottoway River.

According to our records, the FESE Roanoke logperch and FSST Atlantic pigtoe are known form Stony Creek, a designated Threatened and Endangered (T&E) species water for these species. The FESE Roanoke logperch, FESE dwarf wedgemussel, and FSST Atlantic pigtoe are known from the Nottoway River. The Nottoway River is a designated Threatened and Endangered (T&E) species water for these species.

In general, the ammonia limits proposed within the EPA rule are expressed on the basis of total ammonia-nitrogen (TAN). The proposed EPA ammonia limit for waters with mussels (not T&E mussels, any mussel species) is:

CMC (Criterion Maximum Concentration or acute) - 2.9 mg N/L (at pH 8 and 25C)

CCC (Criterion Continuous Concentration or chronic) - 0.26 mg N/L (at pH 8 and 25C) with a 4-day average within the 30 day average period no higher than 2.5 the CCC, which would be 0.65 mg N/L.

The ammonia limits proposed within the EPA rule are the best information currently available regarding ammonia levels protective of mussels. Therefore, we recommend the EPA values be implemented in this permit for this and all future VPDES permits.

We recommend UV disinfection be substituted for the use of chlorine for disinfection. Based on the dilution factor of the receiving stream, and provided the project adheres to the effluent limitations and monitoring requirements specified in the permit, we do not anticipate the re-issuance of this existing permit to result in adverse impact to this designated T&E waters or its associated species. We recommend contacting the USFWS regarding all federally listed species.

Thank you for the opportunity to provide comments.

Ernie Aschenbach

Environmental Services Biologist

Virginia Dept. of Game and Inland Fisheries

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